

**THIRD ADDENDUM TO
TIMBER SUPPLY ANALYSIS
FOR TREE FARM LICENSE 8**

**Pope & Talbot Ltd.
Boundary Timber Division
Management Plan No. 10**



**Prepared by:
Timberline Forest Inventory Consultants Ltd.**

May 8, 2002

TABLE OF CONTENTS

1.	INTRODUCTION.....	1
2.	SENSITIVITY ANALYSES.....	2
2.1	NEW BASECASE	2
2.2	ADJUST TIMBER HARVESTING LANDBASE BY $\pm 10\%$	4
2.3	ADJUST NATURAL STAND YIELDS BY $\pm 10\%$	7
2.4	ADJUST MANAGED STAND YIELDS BY $\pm 10\%$	10
2.5	ADJUST MINIMUM HARVEST AGES BY $\pm 20\%$	13
2.6	INCREASE REGENERATION DELAYS BY 2 YEARS	16
2.7	ALTER IRM MAXIMUM DISTURBANCE LIMITS BY $\pm 5\%$	18
2.8	APPLY INVENTORY SITE INDEX TO ALL MSYTS	21
2.9	COMPOSITE SCENARIO.....	23
2.9.1	<i>With mature-plus-old seral retention requirements.....</i>	<i>23</i>
2.9.2	<i>Without mature-plus-old seral retention requirements.....</i>	<i>26</i>
3.	SUMMARY	29

LIST OF TABLES

TABLE 2.1	NEW BASE CASE HARVEST FLOW.....	2
TABLE 2.2	MULE DEER WINTER RANGE MATURE FOREST RETENTION REQUIREMENTS	23
TABLE 2.3	OLD SERAL TARGET PERCENTAGES FOR VARIABLE TFL CONTRIBUTION.....	24
TABLE 2.4	MATURE-PLUS-OLD SERAL TARGET PERCENTAGES FOR VARIABLE TFL CONTRIBUTION.....	25
TABLE 3.1	HARVEST FLOW SUMMARIES – PART 1	30
TABLE 3.2	HARVEST FLOW SUMMARIES – PART 2	31
TABLE 3.3	HARVEST FLOW SUMMARIES – PART 3	32

LIST OF FIGURES

FIGURE 2.1	NEW BASE CASE HARVEST FLOW AND INVENTORY CHARACTERISTICS.....	2
FIGURE 2.2	NEW BASE CASE, OLD SERAL RETENTION IN LOW BEO ZONES.....	3
FIGURE 2.3	THLB + 10%, IMPACT ON AVAILABLE INVENTORY	4
FIGURE 2.4	THLB + 10%, REVISED HARVEST FORECAST.....	4
FIGURE 2.5	THLB - 10%, IMPACT ON AVAILABLE INVENTORY	5
FIGURE 2.6	THLB - 10%, REVISED HARVEST FORECAST.....	5
FIGURE 2.7	THLB + 10%, OLD SERAL RETENTION IN LOW BEO ZONES	6
FIGURE 2.8	THLB - 10%, OLD SERAL RETENTION IN LOW BEO ZONES	6
FIGURE 2.9	NATURAL STAND YIELDS + 10%, IMPACT ON AVAILABLE INVENTORY	7
FIGURE 2.10	NATURAL STAND YIELDS + 10%, REVISED HARVEST FORECAST	7
FIGURE 2.11	NATURAL STAND YIELDS - 10%, IMPACT ON AVAILABLE INVENTORY	8
FIGURE 2.12	NATURAL STAND YIELDS - 10%, REVISED HARVEST FORECAST.....	8
FIGURE 2.13	NATURAL STAND YIELDS + 10%, OLD SERAL RETENTION IN LOW BEO ZONES.....	9
FIGURE 2.14	NATURAL STAND YIELDS - 10%, OLD SERAL RETENTION IN LOW BEO ZONES.....	9
FIGURE 2.15	MANAGED STAND YIELDS + 10%, IMPACT ON AVAILABLE INVENTORY	10
FIGURE 2.16	MANAGED STAND YIELDS + 10%, REVISED HARVEST FORECAST.....	10
FIGURE 2.17	MANAGED STAND YIELDS - 10%, IMPACT ON AVAILABLE INVENTORY	11
FIGURE 2.18	MANAGED STAND YIELDS - 10%, REVISED HARVEST FORECAST.....	11
FIGURE 2.19	MANAGED STAND YIELDS + 10%, OLD SERAL RETENTION IN LOW BEO ZONES.....	12

FIGURE 2.20 MANAGED STAND YIELDS - 10%, OLD SERAL RETENTION IN LOW BEO ZONES12

FIGURE 2.21 MINIMUM HARVEST AGES + 20%, IMPACT ON AVAILABLE INVENTORY13

FIGURE 2.22 MINIMUM HARVEST AGES + 20%, REVISED HARVEST FORECAST13

FIGURE 2.23 MINIMUM HARVEST AGES - 20%, IMPACT ON AVAILABLE INVENTORY14

FIGURE 2.24 MINIMUM HARVEST AGES - 20%, REVISED HARVEST FORECAST14

FIGURE 2.25 MINIMUM HARVEST AGES + 20%, OLD SERAL RETENTION IN LOW BEO ZONES15

FIGURE 2.26 MINIMUM HARVEST AGES - 20%, OLD SERAL RETENTION IN LOW BEO ZONES15

FIGURE 2.27 REGENERATION DELAY + 2 YEARS, IMPACT ON AVAILABLE INVENTORY16

FIGURE 2.28 REGENERATION DELAY + 2 YEARS, REVISED HARVEST FORECAST16

FIGURE 2.29 REGENERATION DELAY + 2 YEARS, OLD SERAL RETENTION IN LOW BEO ZONES17

FIGURE 2.30 IRM DISTURBANCE LIMITS + 5%, IMPACT ON AVAILABLE INVENTORY18

FIGURE 2.31 IRM DISTURBANCE LIMITS - 5%, IMPACT ON AVAILABLE INVENTORY19

FIGURE 2.32 IRM DISTURBANCE LIMITS - 5%, REVISED HARVEST FORECAST19

FIGURE 2.33 IRM DISTURBANCE LIMITS - 5%, OLD SERAL RETENTION IN LOW BEO ZONES20

FIGURE 2.34 INVENTORY SI APPLIED TO ALL MSYTs, IMPACT ON AVAILABLE INVENTORY21

FIGURE 2.35 INVENTORY SI APPLIED TO ALL MSYTs, REVISED HARVEST FORECAST21

FIGURE 2.36 INVENTORY SI APPLIED TO ALL MSYTs, OLD SERAL RETENTION IN LOW BEO ZONES22

FIGURE 2.37 COMPOSITE SCENARIO WITH MATURE SERAL, IMPACT ON AVAILABLE INVENTORY25

FIGURE 2.38 COMPOSITE SCENARIO WITH MATURE SERAL, REVISED HARVEST FORECAST26

FIGURE 2.39 COMPOSITE SCENARIO WITHOUT MATURE SERAL, IMPACT ON AVAILABLE INVENTORY26

FIGURE 2.40 COMPOSITE SCENARIO WITHOUT MATURE SERAL, REVISED HARVEST FORECAST27

FIGURE 2.41 COMPOSITE WITH MATURE SERAL, OLD SERAL RETENTION IN LOW BEO ZONES28

FIGURE 2.42 COMPOSITE WITHOUT MATURE SERAL, OLD SERAL RETENTION IN LOW BEO ZONES28



1. INTRODUCTION

This document is the third addendum to the *TFL 8 Timber Supply Analysis Report* (AR). It presents several additional sensitivity analyses requested by the Ministry of Forests to provide further information in support of the AAC determination on TFL8.

The AR presented three alternative harvest flows. A maximum even flow harvest level (186,600 cubic metres per year) was determined by applying full old seral requirements in low BEO areas for the entire planning horizon. A second maximum even flow harvest level (205,600 cubic metres per year) was determined by applying one-third (1/3) old seral requirements in low BEO areas, and full old seral requirements elsewhere, for the entire planning horizon. Finally, the base case harvest flow was developed using the reduced seral requirements throughout the planning horizon. The base case consisted of the proposed AAC of 163,535 cubic metres per year (m³/yr) for six (6) decades followed by an increase to 208,100 m³/yr for the remainder of the planning horizon. The proposed AAC level was chosen based on consideration of several downward pressures whose impact was estimated relative to the more conservative maximum even flow estimate of 186,600 m³/yr.

MoF staff at Timber Supply Branch (TSB) have requested that the following sensitivity analyses be completed relative to the 205,600 m³/yr harvest level:

- Adjust timber harvesting landbase (THLB) \pm 10%;
- Adjust natural stand yields (NSY) \pm 10%;
- Adjust managed stand yields (MSY) \pm 10%;
- Adjust managed stand minimum harvest ages (MHA) \pm 20 %;
- Adjust regeneration delays + 2 years;
- Apply inventory site index to MSYT's everywhere; and
- Adjust IRM disturbance limit \pm 5%.

In each of the above analyses, retention requirements for old and mature-plus-old seral areas were applied as previously documented in Table 10.9 of the Timber Supply Analysis Information Package for TFL 8 (IP), with old seral retention levels set at 1/3 of the full requirement in low biodiversity emphasis option (BEO) areas.

In addition to the above, MoF planning staff at the Boundary Forest District suggested that several of the previously developed sensitivity factors be combined, resulting in two composite sensitivity analyses, also relative to the 205,600 m³/yr harvest level. The following factors were combined to formulate the first composite scenario:

- Apply thermal cover requirements in deer winter range (DWR) zone;
- Reduce yields in NDT 4 open forest types;
- Remove 50% of dense lodgepole pine area from THLB;
- Assume TFL contributes a variable proportion toward old seral retention targets for the combined TSA and TFL landbase; and
- Assume TFL contributes a variable proportion toward mature-plus-old seral retention targets for the combined TSA and TFL landbase.

The second composite analysis incorporated all of the above factors *excluding* the mature-plus-old seral requirement. For both composite scenarios, old seral retention levels were set at 1/3 of the full requirement in low biodiversity emphasis option (BEO) areas.

2. SENSITIVITY ANALYSES

2.1 New basecase

The 205,600 m³/yr harvest level presented in the AR was originally developed as a maximum even flow option. Consequently, no attempt was made to establish a long-term harvest level. In order to make the following sensitivity analyses as informative as possible, a “new base case” forecast was first developed by determining the maximum sustainable harvest level in the long-term, while holding the short- to mid-term harvest level at 205,600 m³/yr. The “new base case” forecast and associated inventory characteristics are shown in Figure 2.1. Following the pinch points in decades 5, 7, 8 and 9, the harvest level was increased to 211,150 m³/yr from decade 12 to the end of the planning horizon.

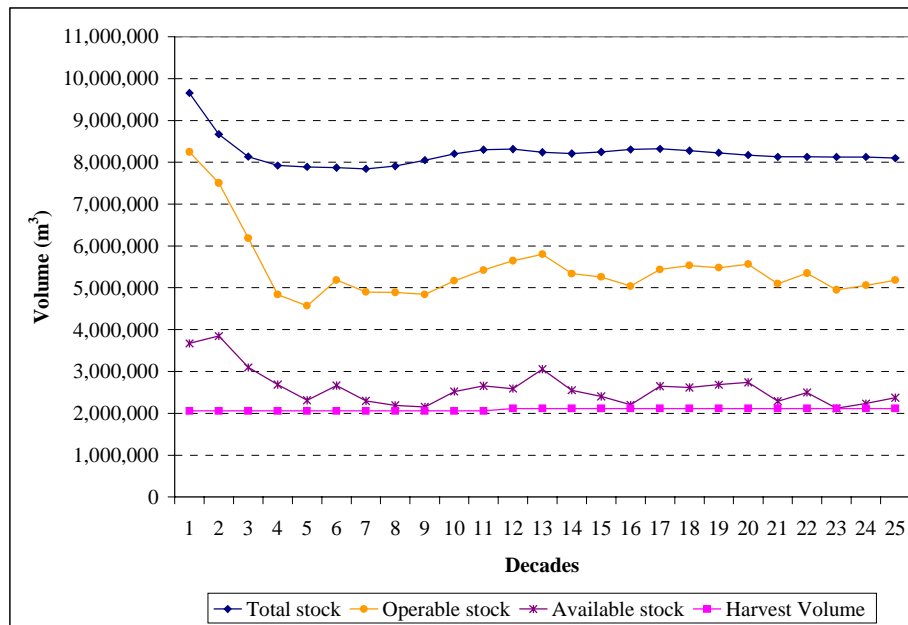


Figure 2.1 New base case harvest flow and inventory characteristics

Table 2.1 New base case harvest flow

Decade	Net Harvest
	m ³ /yr
1-11	205,600
12-25	211,150

Figure 2.2 illustrates the old seral retention levels achieved throughout the planning horizon for the low BEO seral zones.

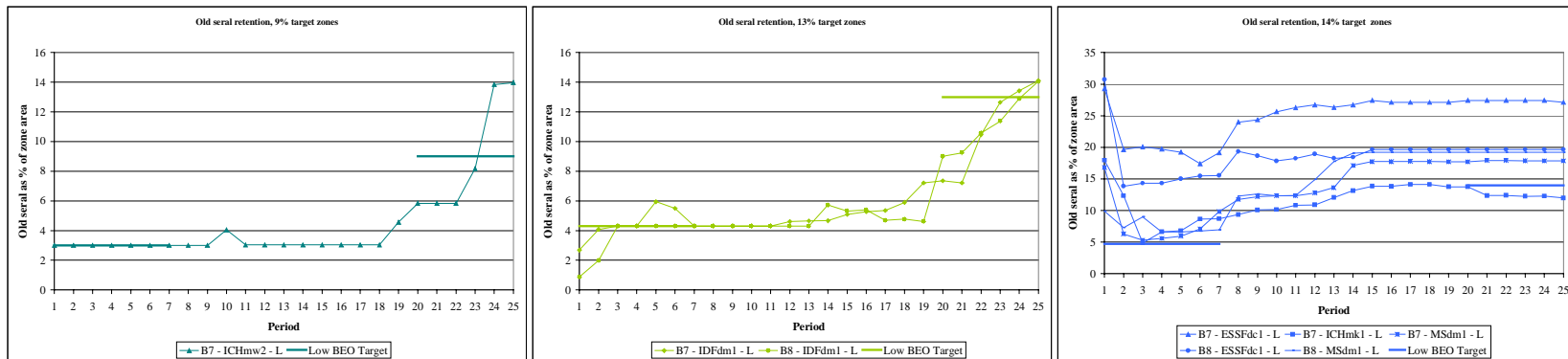


Figure 2.2 New base case, old seral retention in low BEO zones

2.2 Adjust timber harvesting landbase by ± 10%

The THLB area was alternately increased then decreased by 10% by shifting the appropriate number of hectares between the contributing and non-contributing landbase components.

Figure 2.3 shows the base case harvest flow and available inventory volume (both as previously shown in Figure 2.1), and also shows the available inventory volume calculated with the same harvest flow but for the increased THLB. Figure 2.4 shows the revised harvest forecast and associated growing stock profiles. The base case harvest forecast is also included for comparison.

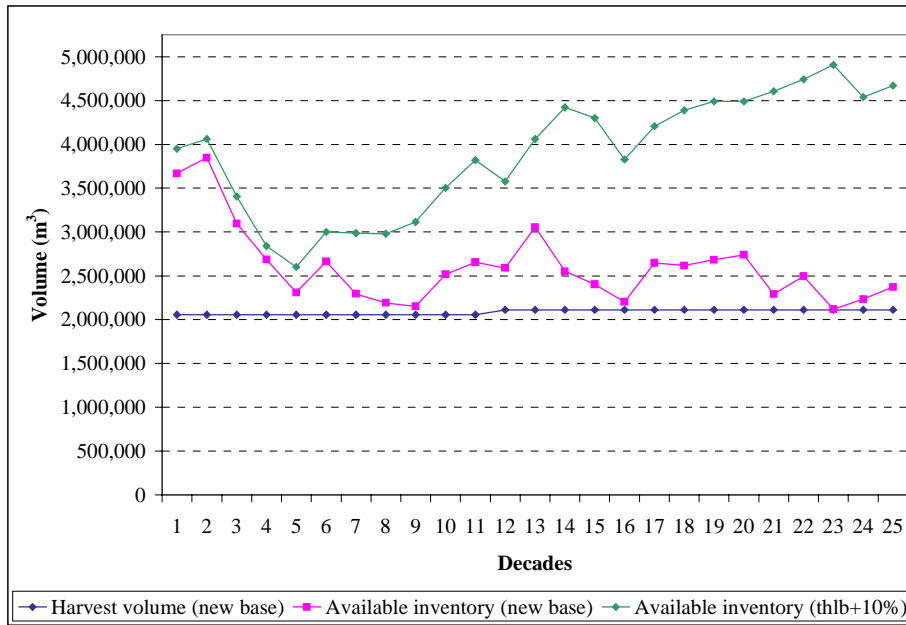


Figure 2.3 THLB + 10%, impact on available inventory

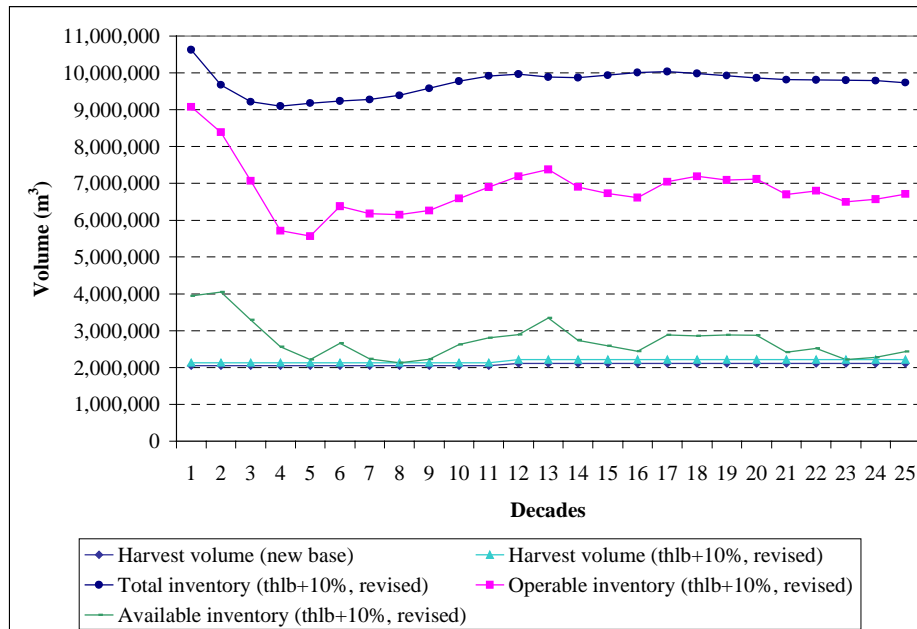


Figure 2.4 THLB + 10%, revised harvest forecast

Figure 2.5 shows the base harvest flow and corresponding available inventory, then shows the available inventory volume determined by applying the same harvest flow to the decreased THLB. The revised harvest forecast and associated growing stock profiles are shown in Figure 2.6, along with the base case harvest forecast for comparison.

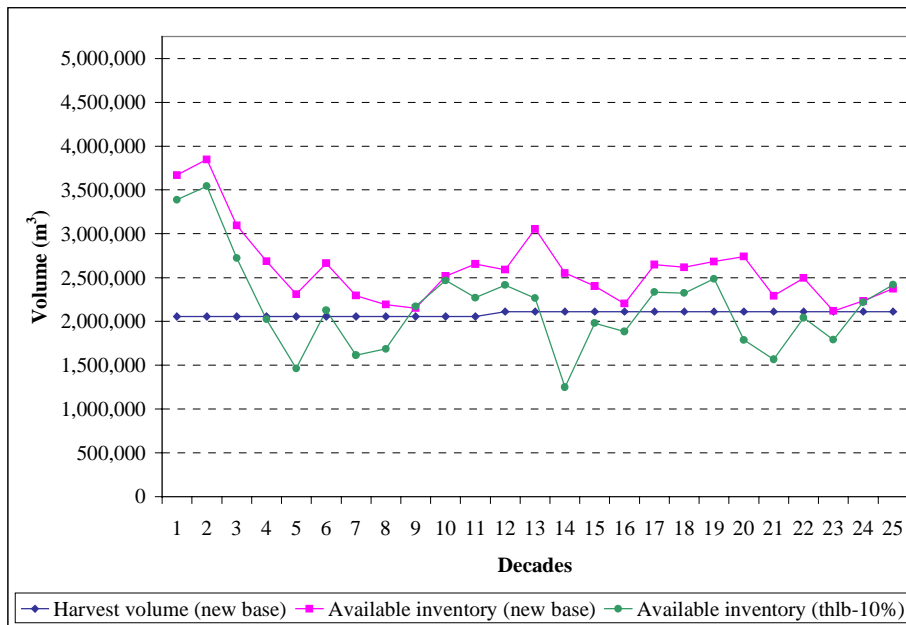


Figure 2.5 THLB - 10%, impact on available inventory

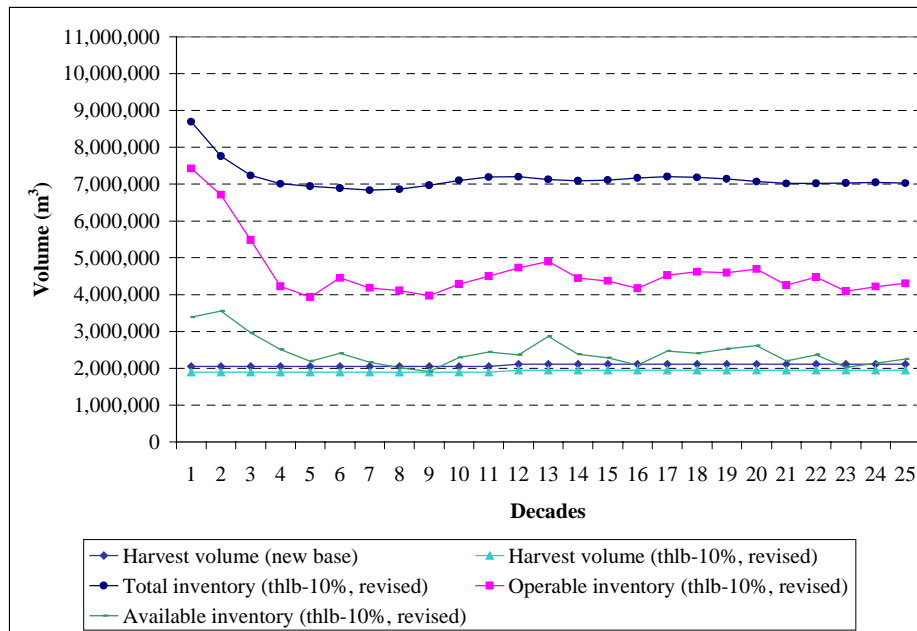


Figure 2.6 THLB - 10%, revised harvest forecast

Old seral retention levels within the low BEO zones are shown over the entire planning horizon for the revised harvest forecasts in Figure 2.7 and in Figure 2.8.

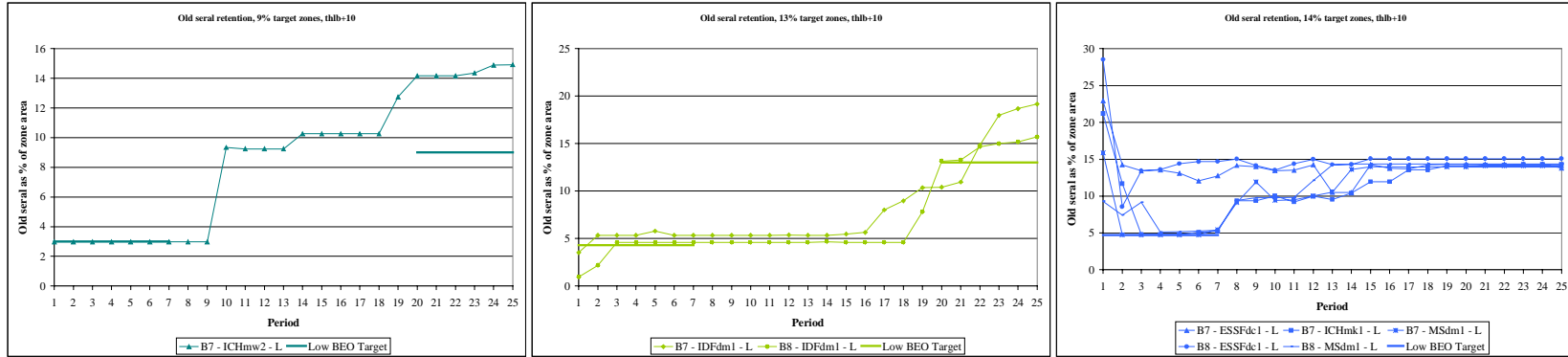


Figure 2.7 THLB + 10%, old seral retention in low BEO zones

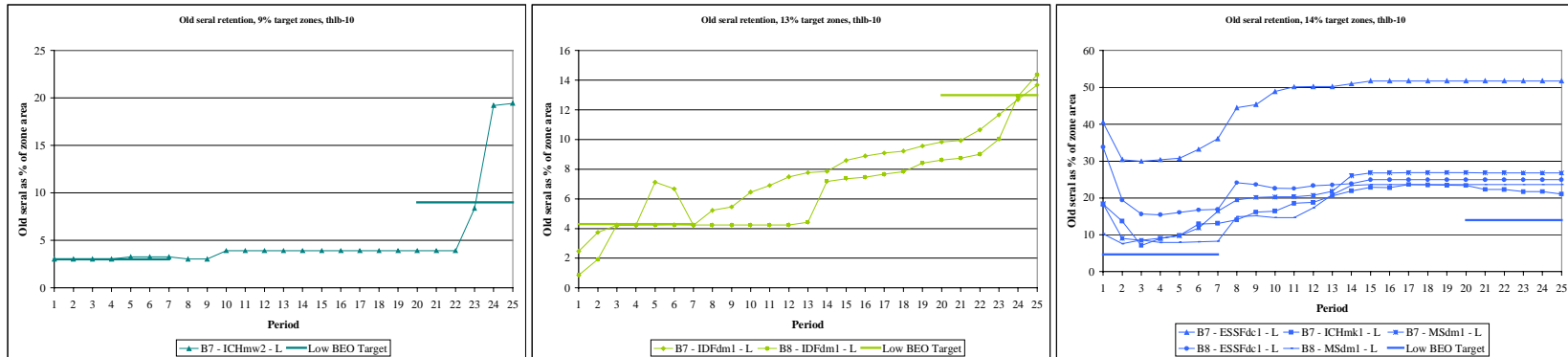


Figure 2.8 THLB - 10%, old seral retention in low BEO zones



2.3 Adjust natural stand yields by ± 10%

Natural stand yields were alternately increased, then decreased by 10% for all stands except those under single-tree selection (STS) management.

Figure 2.9 illustrates the impact of a 10% increase in natural stand yields on the available inventory volume as determined at the base case harvest forecast. A revised harvest forecast and the associated growing stock characteristics are shown in Figure 2.10.

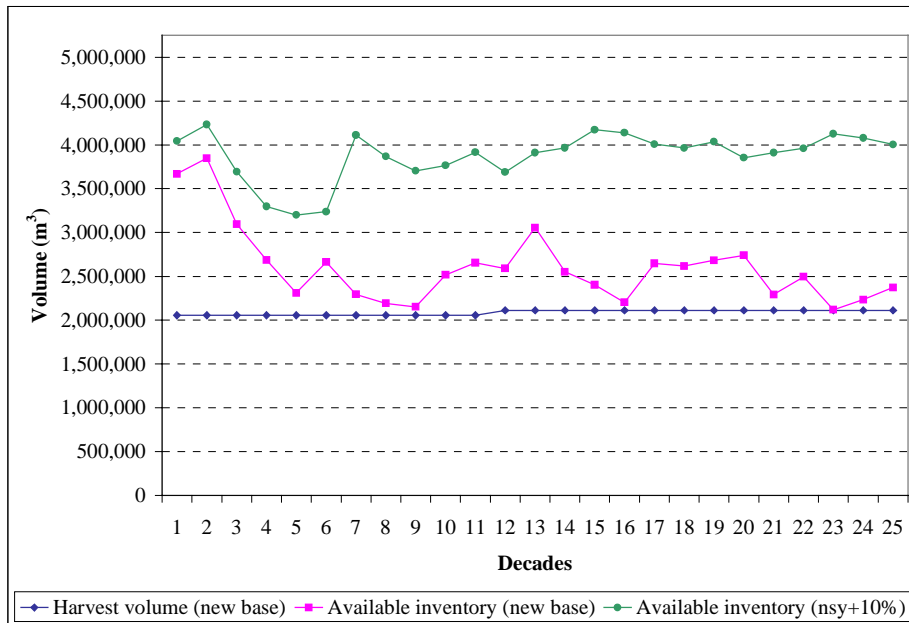


Figure 2.9 Natural stand yields + 10%, impact on available inventory

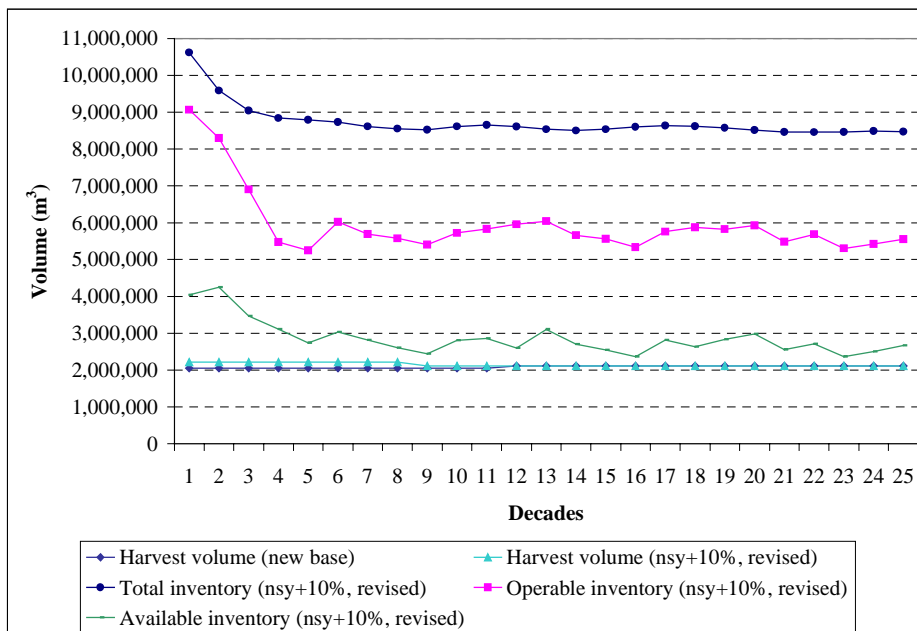


Figure 2.10 Natural stand yields + 10%, revised harvest forecast

Figure 2.11 illustrates the impact of a 10% decrease in natural stand yields on available inventory volume as determined at the base case harvest level. The revised harvest forecast, associated growing stock characteristics, and base case harvest forecast are shown in Figure 2.12.

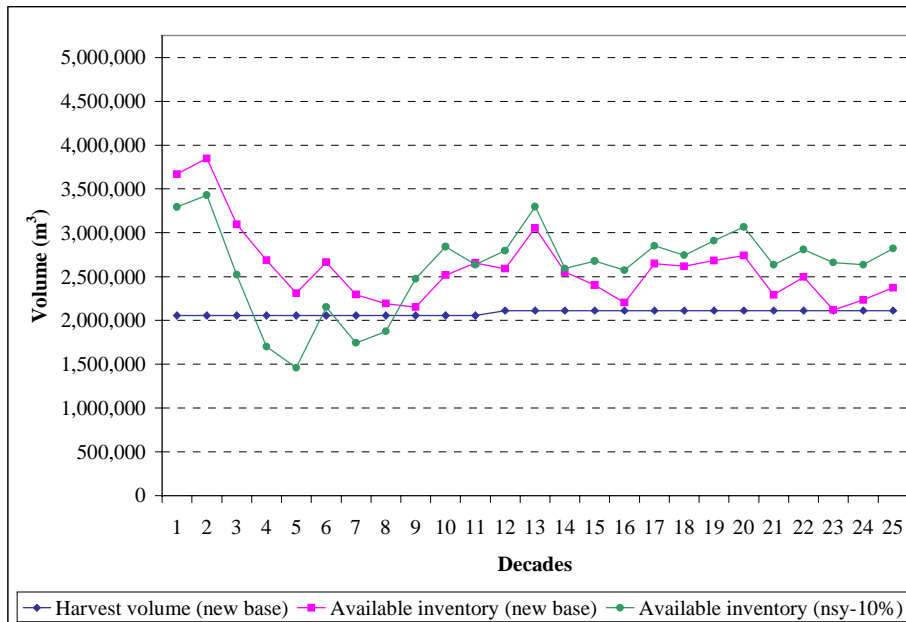


Figure 2.11 Natural stand yields - 10%, impact on available inventory

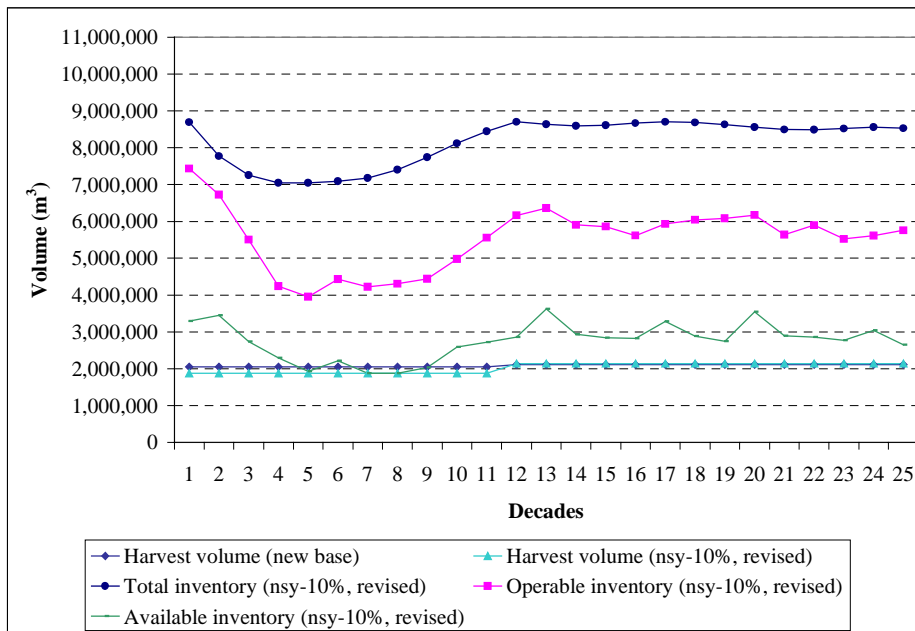


Figure 2.12 Natural stand yields - 10%, revised harvest forecast

Old seral retention levels within the low BEO zones are shown for the revised harvest forecasts in Figure 2.13 and in Figure 2.14.

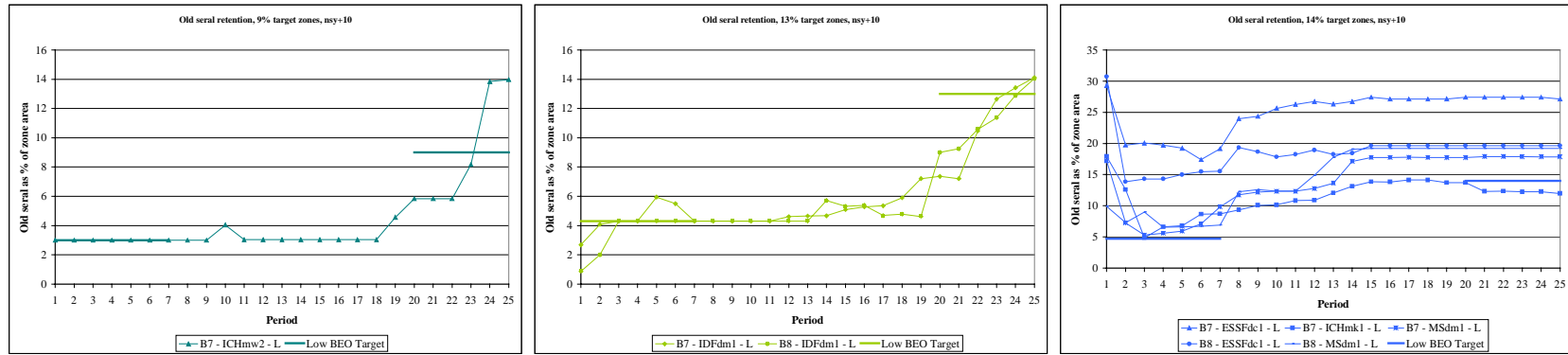


Figure 2.13 Natural stand yields + 10%, old seral retention in low BEO zones

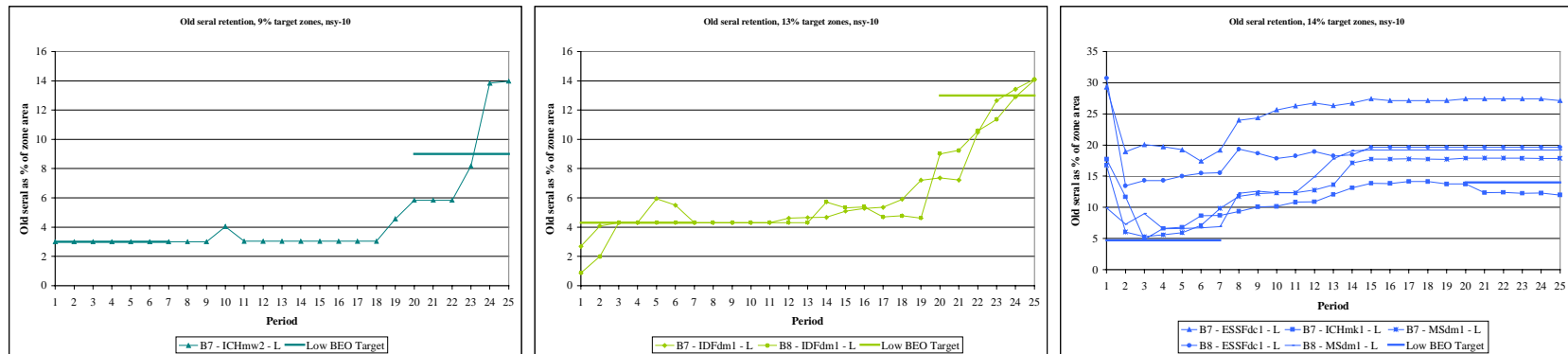


Figure 2.14 Natural stand yields - 10%, old seral retention in low BEO zones



2.4 Adjust managed stand yields by ± 10%

Managed stand yields were alternately increased and decreased by 10% for all stands except those under STS management.

The impact of a 10% increase in managed stand yields on the available inventory determined at the base case harvest level is shown in Figure 2.15. Figure 2.16 illustrates the revised harvest forecast and associated inventory characteristics. The base case harvest forecast is also shown for comparison.



Figure 2.15 Managed stand yields + 10%, impact on available inventory

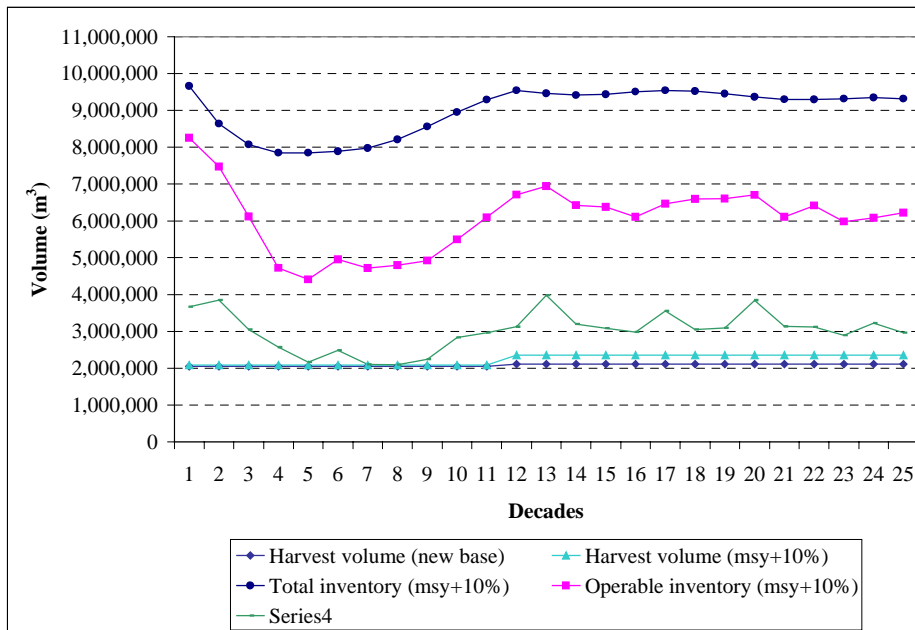


Figure 2.16 Managed stand yields + 10%, revised harvest forecast

Figure 2.17 illustrates the impact of decreasing managed stand yields by 10% on available inventory volume. The revised harvest forecast and associated growing stock characteristics are presented in Figure 2.18.

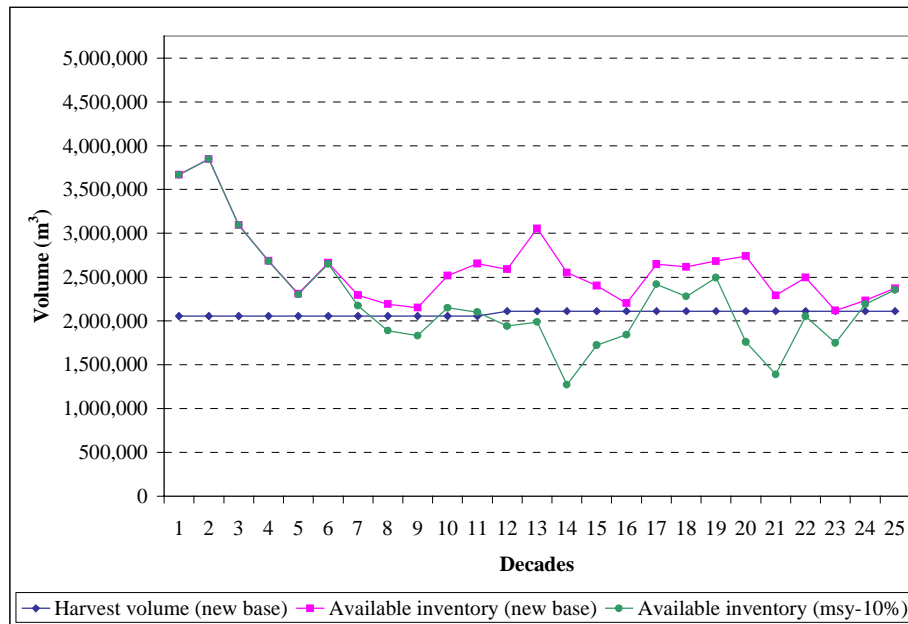


Figure 2.17 Managed stand yields - 10%, impact on available inventory

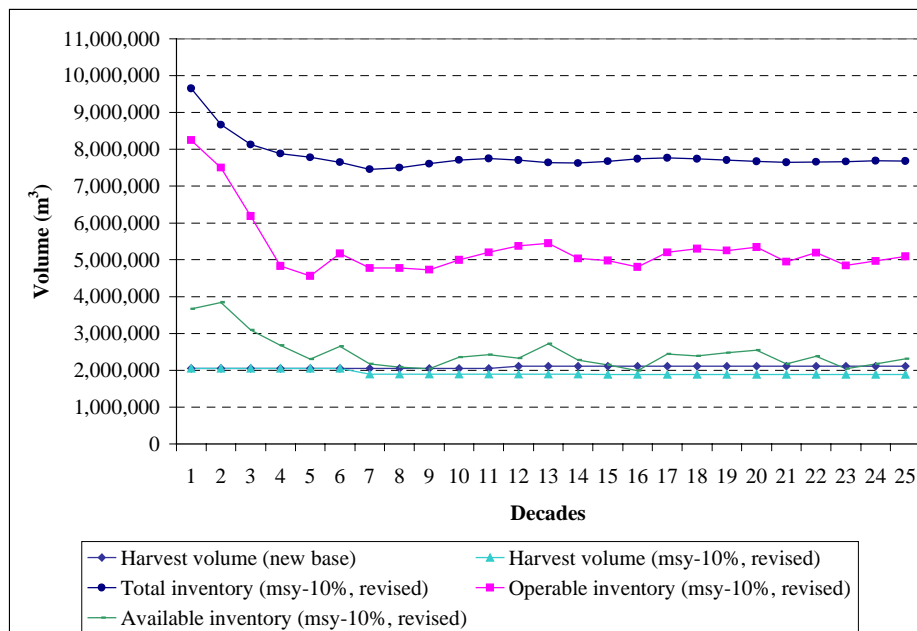


Figure 2.18 Managed stand yields - 10%, revised harvest forecast

Figure 2.19 and Figure 2.20 show old seral retention levels within the low BEO zones for the two revised harvest forecasts.

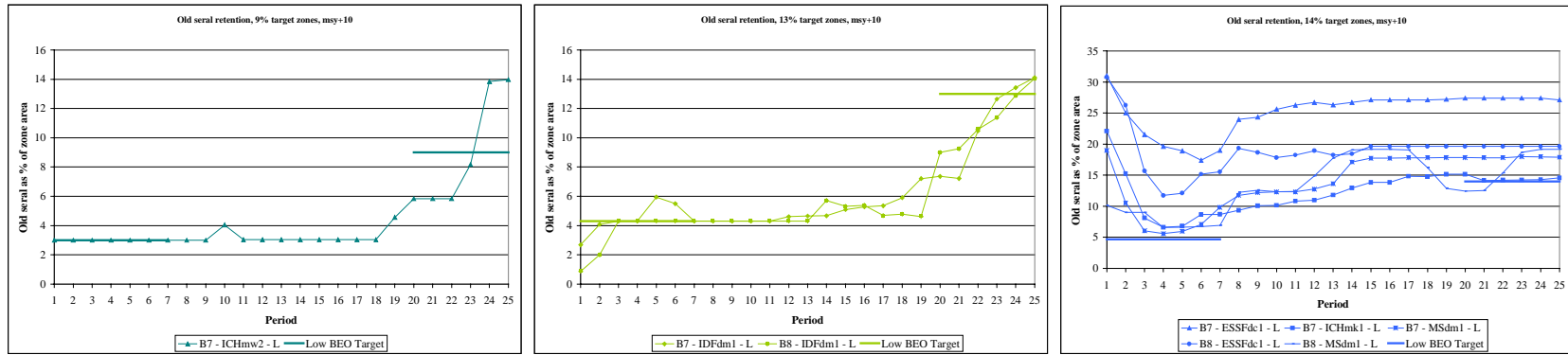


Figure 2.19 Managed stand yields + 10%, old seral retention in low BEO zones

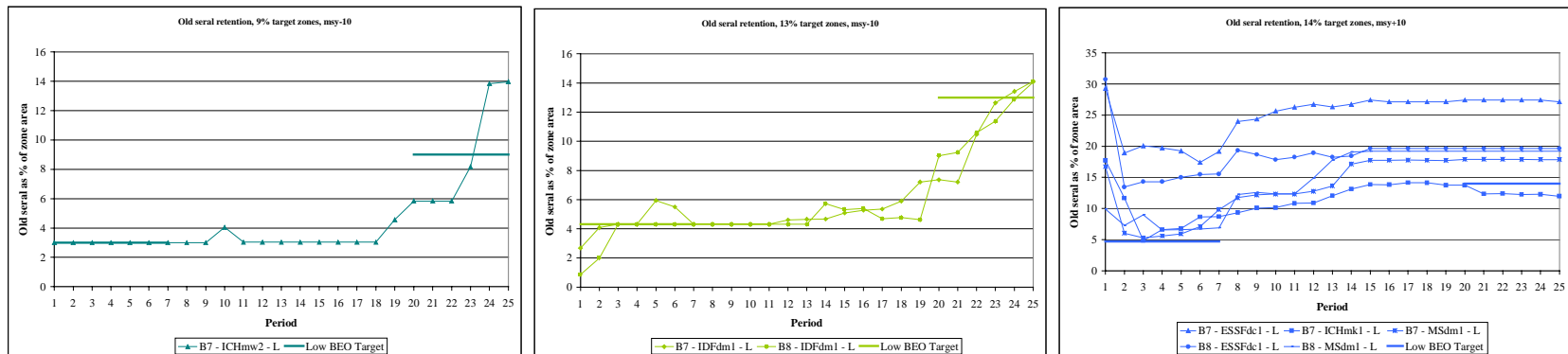


Figure 2.20 Managed stand yields - 10%, old seral retention in low BEO zones

2.5 Adjust minimum harvest ages by ± 20%

Minimum harvest ages for all analysis units were alternately increased, then decreased by 20%. The effect of a 20% increase in minimum harvest age on the available inventory volume determined for the base case harvest level is shown Figure 2.21. The revised harvest forecast and associated growing stock characteristics are shown in Figure 2.22.

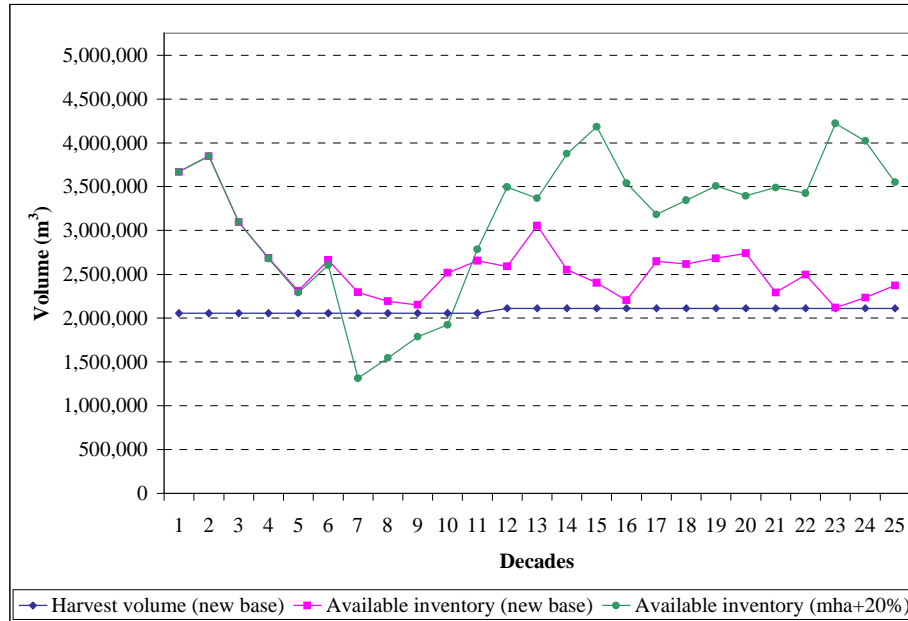


Figure 2.21 Minimum harvest ages + 20%, impact on available inventory

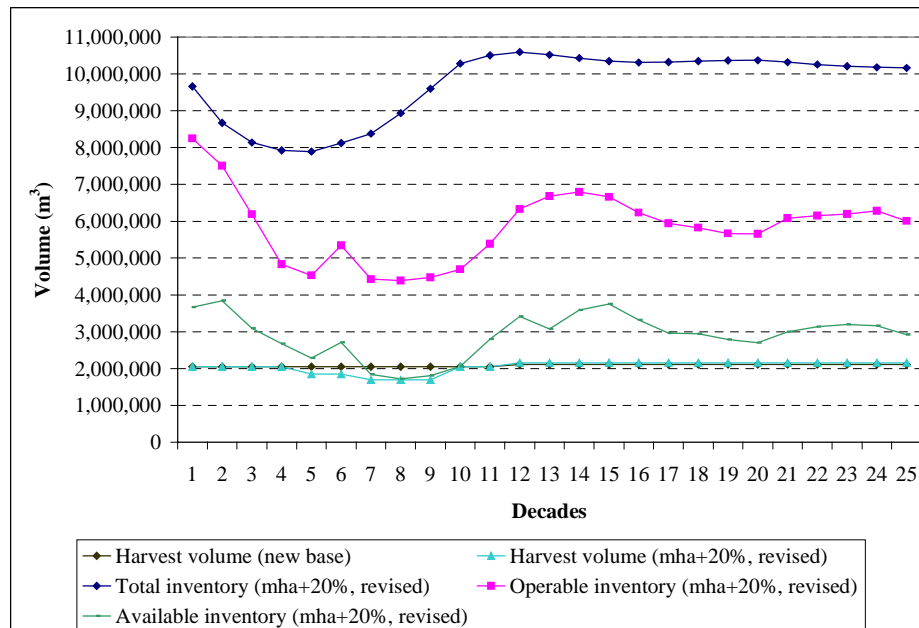


Figure 2.22 Minimum harvest ages + 20%, revised harvest forecast

Figure 2.23 shows the change in available inventory volume resulting from a 20% decrease in minimum harvest ages as calculated for the base case harvest levels. Figure 2.24 shows the revised harvest forecast and associated growing stock characteristics.

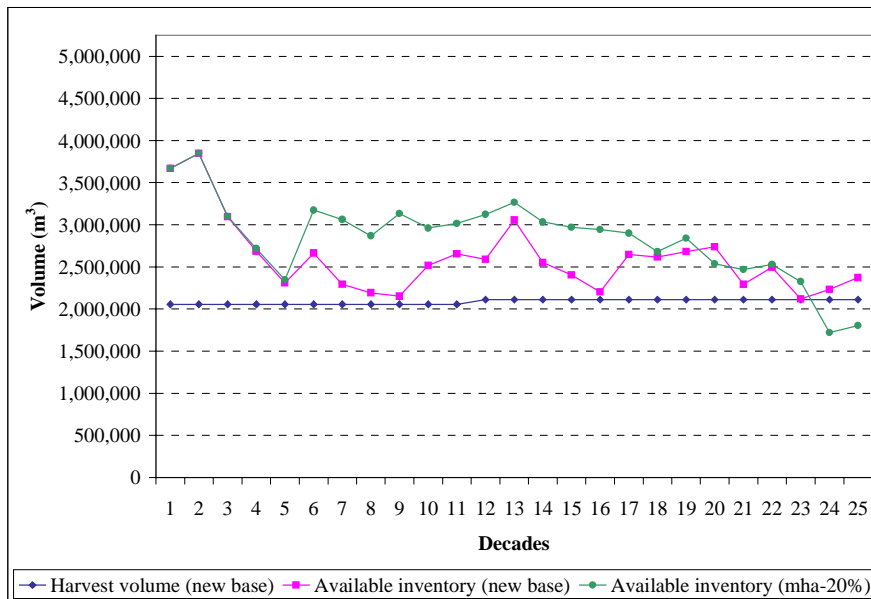


Figure 2.23 Minimum harvest ages - 20%, impact on available inventory

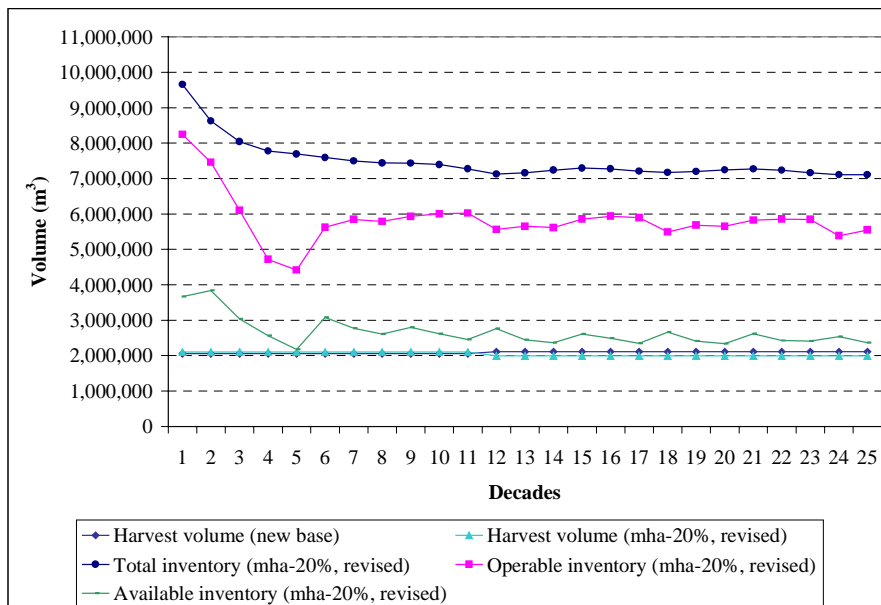


Figure 2.24 Minimum harvest ages - 20%, revised harvest forecast

Old seral retention levels within the low BEO zones are shown over the entire planning horizon for the revised harvest forecasts in Figure 2.25 and Figure 2.26. The run in which minimum harvest ages were increased by 20% was the only scenario reported in this document for which full old seral targets were not initially met by the end of the planning horizon. In order to force compliance in this scenario, old seral retention targets as specified in the model were increased from the 2/3 draw-down targets to the full targets for low BEO areas in decade 12, producing the result shown in Figure 2.25.

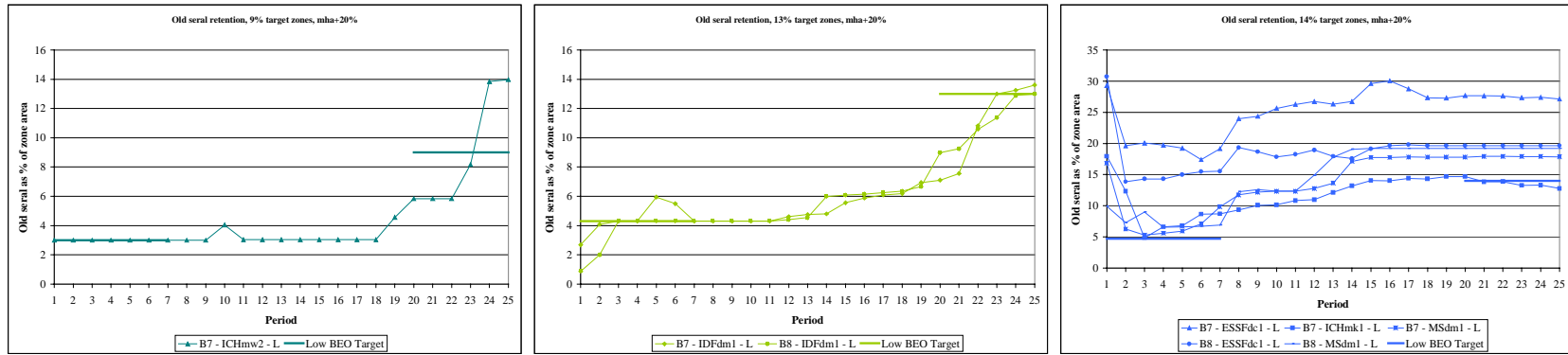


Figure 2.25 Minimum harvest ages + 20%, old seral retention in low BEO zones

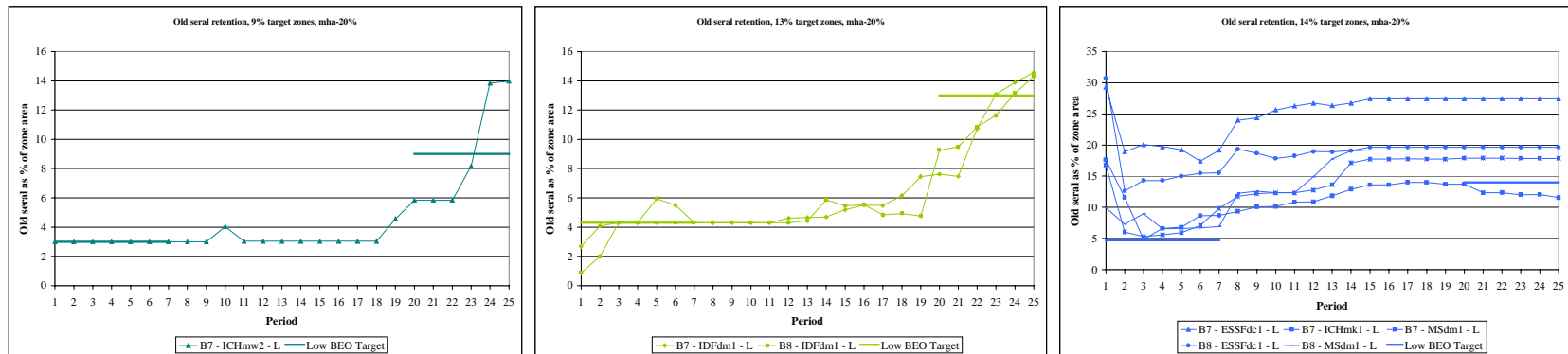


Figure 2.26 Minimum harvest ages - 20%, old seral retention in low BEO zones



2.6 Increase regeneration delays by 2 years

Regeneration delays for all analysis units were increased by 2 years, which impacted the available inventory volume as shown in Figure 2.27. Figure 2.28 shows the revised harvest forecast and associated growing stock characteristics.

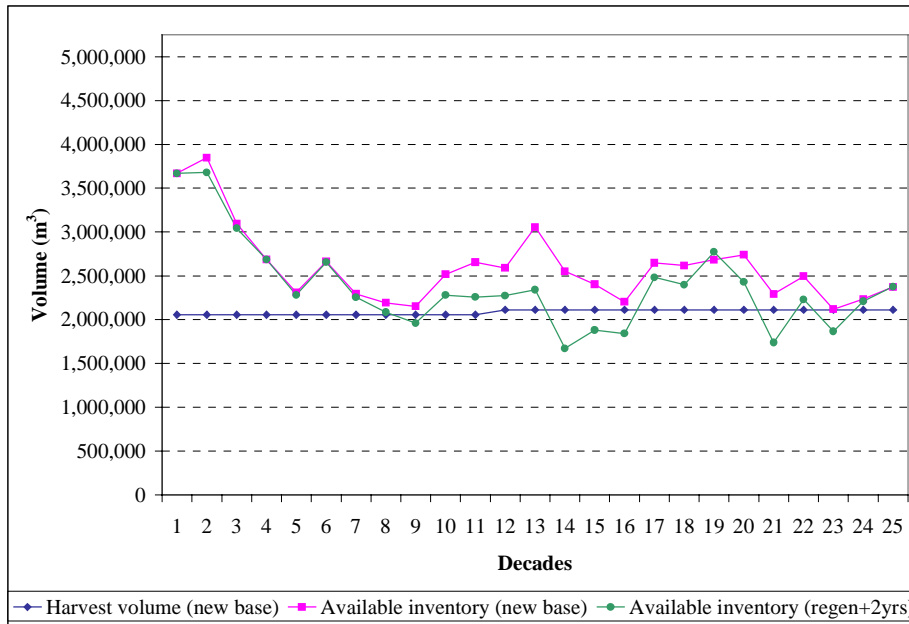


Figure 2.27 Regeneration delay + 2 years, impact on available inventory

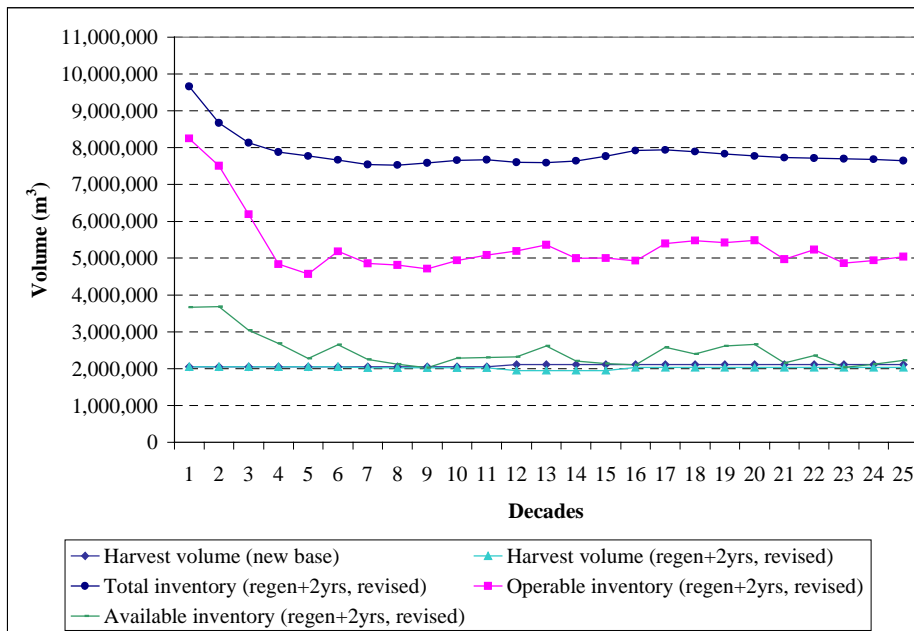


Figure 2.28 Regeneration delay + 2 years, revised harvest forecast

Old seral retention levels within the low BEO zones are shown over the entire planning horizon for the revised harvest forecast in Figure 2.29.

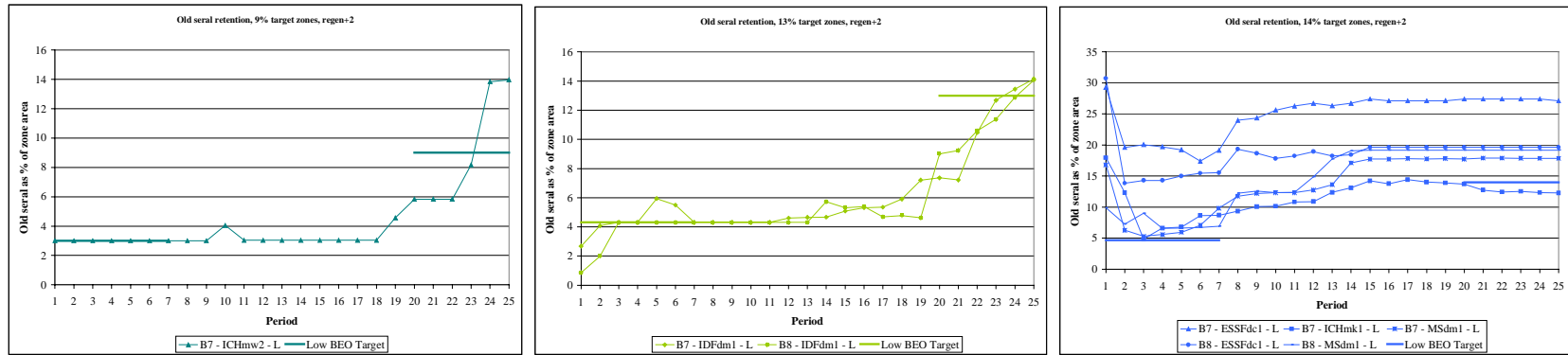


Figure 2.29 Regeneration delay + 2 years, old seral retention in low BEO zones

2.7 Alter IRM maximum disturbance limits by ± 5%

Maximum limits on disturbance within the integrated resource management zone were first increased, then decreased by 5%. The impact of a 5% increase in the permitted level of disturbance on available inventory volume is shown in Figure 2.30. The pinch points that were responsible for limiting the base case harvest level in the short- and mid-term eras are not affected by the relaxation of disturbance limits, so no new harvest forecast was required for this sensitivity analysis.

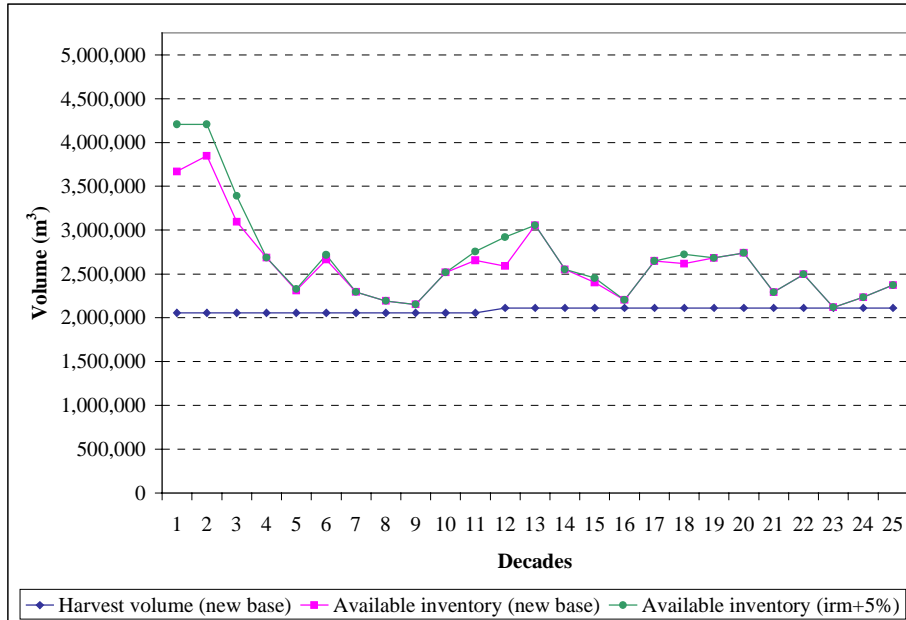


Figure 2.30 IRM disturbance limits + 5%, impact on available inventory

The impact of a 5% decrease in the IRM disturbance limit on available inventory volume as determined at the base case harvest levels is shown in Figure 2.31. Figure 2.32 shows the revised harvest forecast and associated growing stock characteristics.

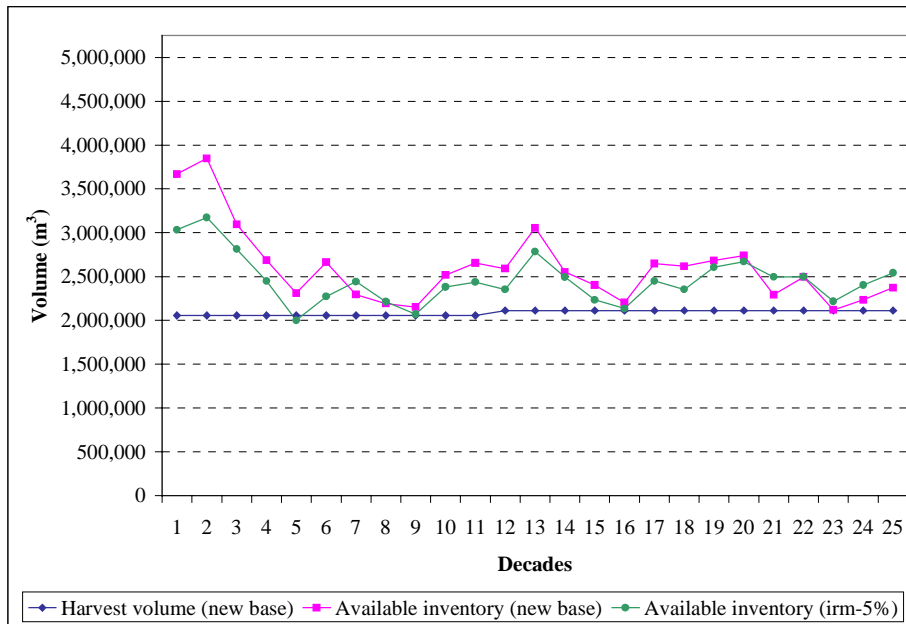


Figure 2.31 IRM disturbance limits - 5%, impact on available inventory

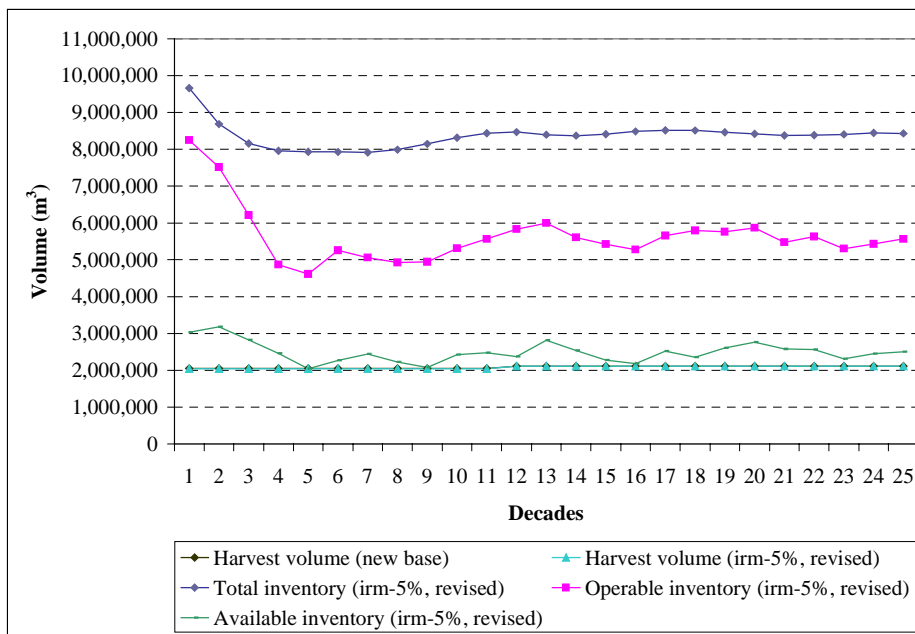


Figure 2.32 IRM disturbance limits - 5%, revised harvest forecast

Old seral retention levels within the low BEO zones are shown over the entire planning horizon for the revised harvest forecast in Figure 2.33.

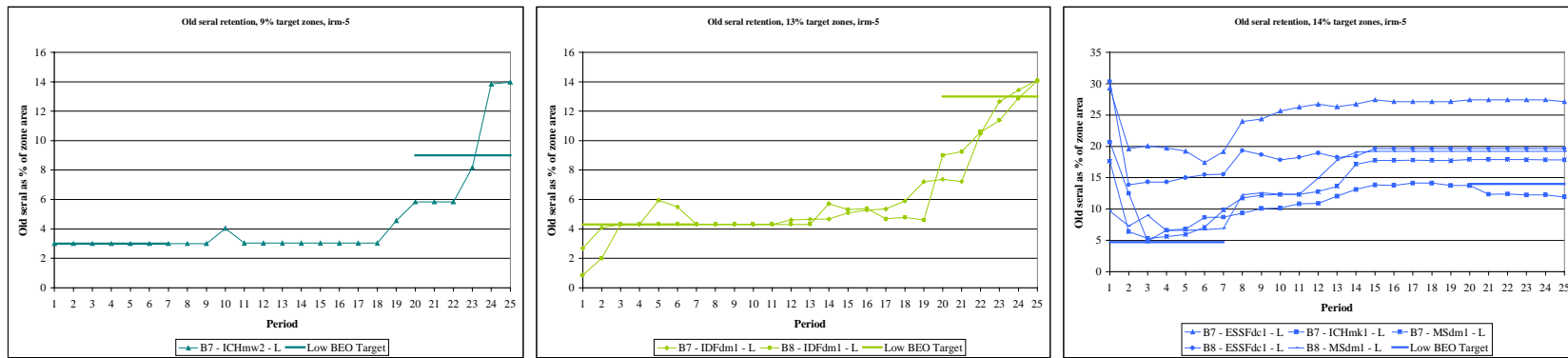


Figure 2.33 IRM disturbance limits - 5%, old seral retention in low BEO zones

2.8 Apply inventory site index to all MSYTs

Managed stand yield tables (MSYTs) derived using inventory site index values rather than potential site index values were applied to all stands except those under STS management.

The impact of removing the potential site index lift from future stand yield estimates on the available inventory volume is shown in Figure 2.34. The modified harvest forecast and associated growing stock characteristics are shown in Figure 2.35.

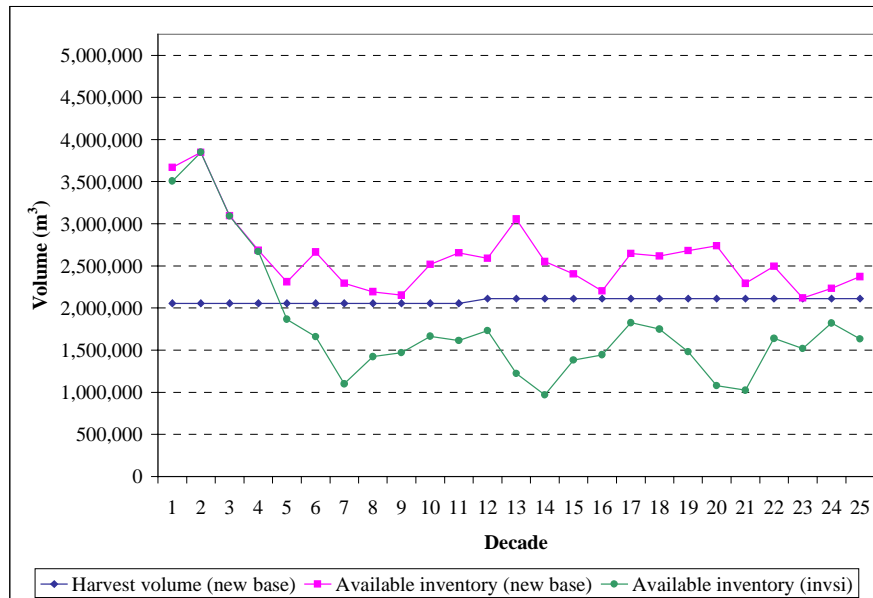


Figure 2.34 Inventory SI applied to all MSYTs, impact on available inventory

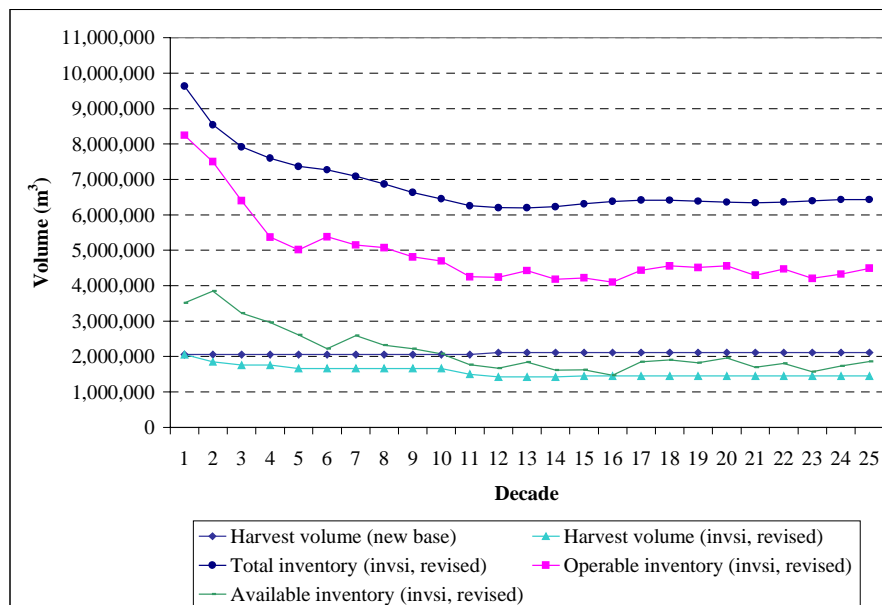


Figure 2.35 Inventory SI applied to all MSYTs, revised harvest forecast

Old seral retention levels within the low BEO zones are shown over the entire planning horizon for the revised harvest forecast in Figure 2.36.

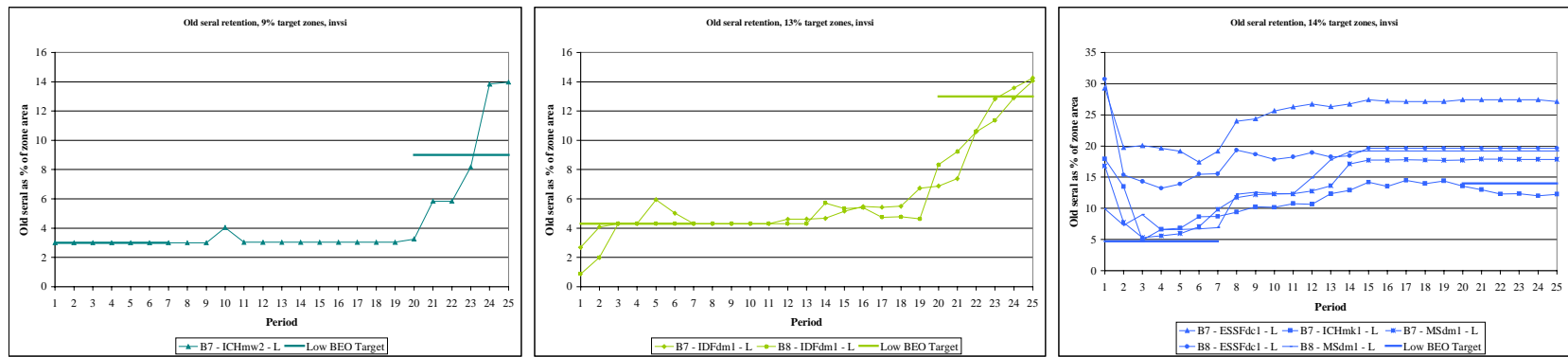


Figure 2.36 Inventory SI applied to all MSYTs, old seral retention in low BEO zones

2.9 Composite scenario

As outlined in Section 1, several previously evaluated factors were combined to produce two composite scenarios.

Mature thermal cover requirements were explored as a sensitivity issue relative to the original base case (163,535 m³/yr) in Section 7.3.5 of the AR. The cover requirements shown in Table 2.2 were applied at the landscape unit-BEC variant level.

Table 2.2 Mule deer winter range mature forest retention requirements

Mule deer winter range type	Min age (yrs)	Min %
IDF dm 1, slopes < 50%	101	25
IDF dm 1, slopes > 50%, southern aspects	101	15
ICH mk 1	121	35
MS dm 1	121	35

The conversion of designated NDT4 areas to open forest condition was presented as a sensitivity issue in Section 7.3.6 of the AR, also relative to the original base case harvest forecast. An analysis of the potential growth and yield impact undertaken by J.S. Thrower & Associates concluded that maintaining stands in an open forest condition would result, on average, in an 80% reduction in yield compared to a fully stocked stand. The initial conversion to open forest condition was simulated by reducing stand yields on first entry to 80% of the yield table value. Maintenance of open forest condition was simulated by reducing yields in all subsequent stand entries to 20% of the yield table value.

The removal of 50% of the 8,558 hectares of dense lodgepole pine stands (as defined in JST 1999) from the THLB was tested as a sensitivity issue relative to the 205,600 m³/yr maximum even flow harvest forecast in Section 1.3 of the *Second Addendum to Timber Supply Analysis for Tree Farm License 8*.

All landscape units within the TFL8 landbase also extend into the adjacent Boundary TSA. Different assumptions regarding the allocation of old seral requirements between the TFL and TSA portions of these landscape units were previously explored in Sections 1.2.1 and 1.2.2 of the *Second Addendum to Timber Supply Analysis for Tree Farm License 8*. The assumption used in the present composite scenarios is that the TFL would contribute to the combined TFL/TSA old seral retention requirement in the same proportion as its' contribution to the total TFL/TSA seral zone area where that proportion was 50% or more; otherwise the TFL would contribute no more than 50% of the total old seral retention requirement. The derivation of old seral retention target percentages for the TFL landbase is summarized in Table 2.3.

2.9.1 With mature-plus-old seral retention requirements

For the first of the two composite scenarios, mature-plus-old seral retention targets were also applied using the same assumption of proportional contribution by the TFL to retention levels calculated for the combined TFL/TSA landbase. The derivation of mature-plus-old seral retention target percentages for the TFL landbase is summarized in Table 2.4.

The impact of incorporating the four factors described in Section 2.9 and the mature-plus-old seral retention targets from Table 2.4 on the volume available for harvest as determined for the new base case harvest forecast is illustrated by Figure 2.37. The revised harvest forecast and associated growing stock characteristics are shown in Figure 2.38.

Table 2.3 Old seral target percentages for variable TFL contribution

1	2	3	4	5	6	7	8	9	10	11	12
Seral Zone	Description	TFL CFLB ha	STS ha	Adjusted TFL ha	TSA CFLB ha	Total CFLB ha	TFL % of CFLB Area	Target % (1/3 Old)	Total Target ha (1/3 Old)	Max. TFL contribution %	TFL Target % (1/3 Old)
1	B1 - ICHmk1 - I	2.3	0.0	2.3	3,557.6	3,559.9	0.1	14	498.4	50	100.0
2	B1 - IDFdm1 - H	2,870.4	755.1	2,115.3	13,236.5	16,106.9	17.8	19	3,060.3	50	72.3
3	B1 - IDFdm1 - I	1,629.6	126.0	1,503.6	0.0	1,629.6	100.0	13	211.8	100	14.1
4	B1 - MSdm1 - H	164.7	17.3	147.5	0.0	164.7	100.0	21	34.6	100	23.5
5	B1 - MSdm1 - I	1,754.0	0.0	1,754.0	9,270.0	11,024.0	15.9	14	1,543.4	50	44.0
6	B7 - ESSFdc1 - L	6,723.5	0.0	6,723.5	189.4	6,912.9	97.3	4.7	324.9	97	4.7
7	B7 - ICHmk1 - L	5,450.2	110.1	5,340.1	1,875.4	7,325.6	74.4	4.7	344.3	74	4.8
8	B7 - ICHmw2 - L	307.0	0.0	307.0	2.0	309.0	99.4	3	9.3	99	3.0
9	B7 - IDFdm1 - L	6,597.9	1,280.0	5,318.0	1,131.5	7,729.4	85.4	4.3	332.4	85	5.3
10	B7 - MSdm1 - L	16,020.6	141.7	15,878.9	751.6	16,772.2	95.5	4.7	788.3	96	4.7
11	B8 - ESSFdc1 - L	3,601.7	0.0	3,601.7	34.6	3,636.3	99.0	4.7	170.9	99	4.7
12	B8 - IDFdm1 - L	9,789.1	615.0	9,174.1	5,712.6	15,501.7	63.1	4.3	666.6	63	4.6
13	B8 - MSdm1 - L	18,264.5	8.6	18,255.9	13,075.2	31,339.7	58.3	4.7	1,473.0	58	4.7

Column 3 = Total crown forested landbase (CFLB) within TFL

Column 4 = Single tree selection area within TFL

Column 5 = Column 3 – Column 4

Column 6 = Total crown forested landbase (CFLB) within TSA, from Table A-3 in Boundary TSA TSR2 Report.

Column 7 = Column 3 + Column 6

Column 8 = $100 * \text{Column 3} / \text{Column 7}$

Column 9 = Old seral retention target percent, from KBHLPO and with 2/3 draw-down in low BEO zones

Column 10 = $\text{Column 7} * \text{Column 9} / 100$

Column 11 = Column 8, where $\text{Column 8} \geq 50$; = 50, where $\text{Column 8} < 50$

Column 12 = $(\text{Column 11} * \text{Column 10}) / \text{Column 5}$, where $(\text{Column 11} * \text{Column 10}) / 100 < \text{Column 5}$;

= 100, where $(\text{Column 11} * \text{Column 10}) / 100 \geq \text{Column 5}$

Table 2.4 Mature-plus-old seral target percentages for variable TFL contribution

1	2	3	4	5	6	7
Seral Zone	Description	Target % (Mat+Old)	TFL % Total CFLB Area	Total Target ha (Mat+Old)	Max. TFL contribution %	TFL Target % (Mat+Old)
1	B1 - ICHmk1 - I	23.0	0.1	818.8	50	100.0
2	B1 - IDFdm1 - H	51.0	17.8	8,214.5	50	100.0
3	B1 - IDFdm1 - I	34.0	100.0	554.1	100	36.8
4	B1 - MSdm1 - H	34.0	100.0	56.0	100	38.0
5	B1 - MSdm1 - I	26.0	15.9	2,866.2	50	81.7
6	B7 - ESSFdc1 - L	14.0	97.3	967.8	97	14.0
7	B7 - ICHmk1 - L	14.0	74.4	1,025.6	74	14.3
8	B7 - ICHmw2 - L	15.0	99.4	46.4	99	15.0
9	B7 - IDFdm1 - L	17.0	85.4	1,314.0	85	21.1
10	B7 - MSdm1 - L	14.0	95.5	2,348.1	96	14.1
11	B8 - ESSFdc1 - L	14.0	99.0	509.1	99	14.0
12	B8 - IDFdm1 - L	17.0	63.1	2,635.3	63	18.1
13	B8 - MSdm1 - L	14.0	58.3	4387.6	58	14.0

Column 3 = Mature-plus-old retention target, from KBHLPO with 2/3 draw-down in low BEO zones

Column 4 = Column 8 from Table 2.3

Column 5 = Column 3 * Table 2.3-Column 7/ 100

Column 6 = Column 11 from Table 2.3

Column 7 = (Column 6 * Column 5)/ Table 2.3-Column 5,

where (Column 11 * Column 10)/100 < Table 2.3-Column 5;

= 100, where (Column 11 * Column 10)/100 ≥ Table 2.3-Column 5



Figure 2.37 Composite scenario with mature seral, impact on available inventory

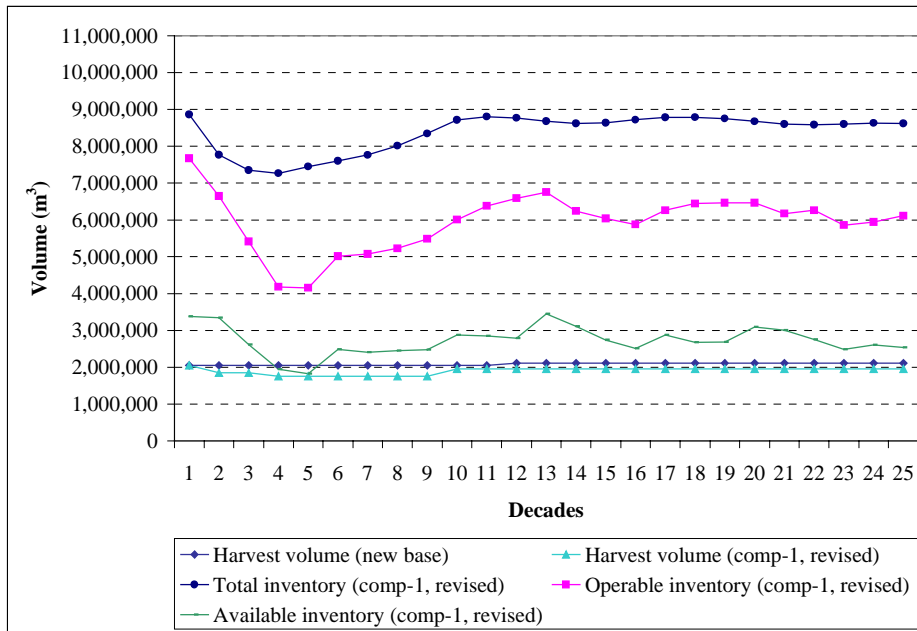


Figure 2.38 Composite scenario with mature seral, revised harvest forecast

2.9.2 Without mature-plus-old seral retention requirements

The second composite scenario incorporated the four factors described in Section 2.9, and no requirement for mature-plus-old seral retention.

Figure 2.39 illustrates the impact of this combination of factors on the available inventory determined at the new base case harvest forecast. The revised harvest forecast and associated growing stock characteristics are shown in Figure 2.40.

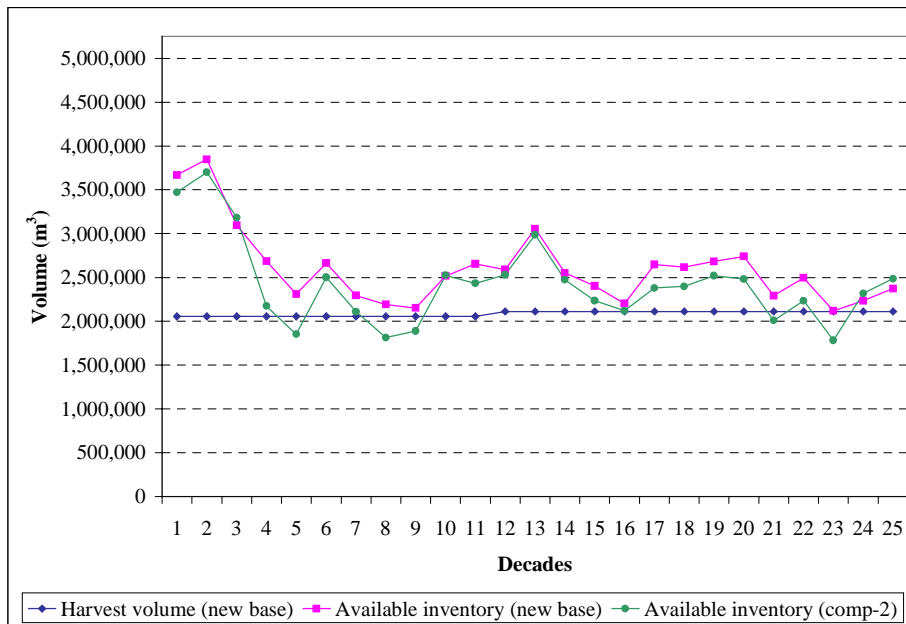


Figure 2.39 Composite scenario without mature seral, impact on available inventory

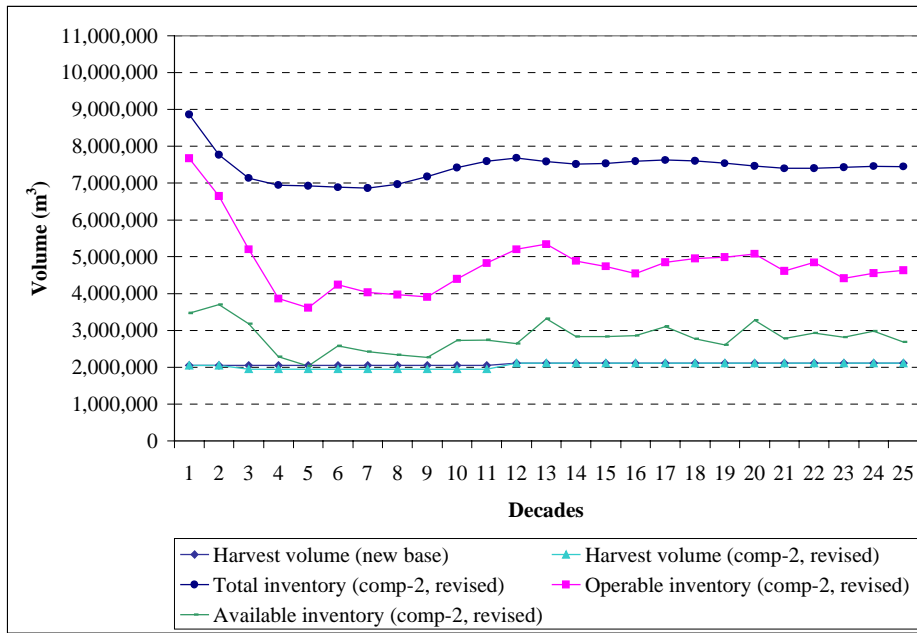


Figure 2.40 Composite scenario without mature seral, revised harvest forecast

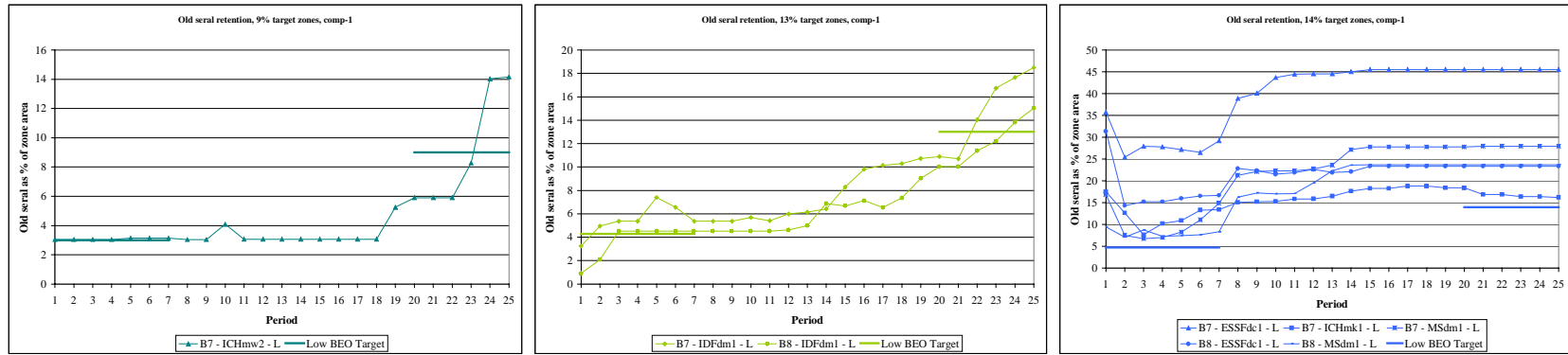


Figure 2.41 Composite with mature seral, old seral retention in low BEO zones

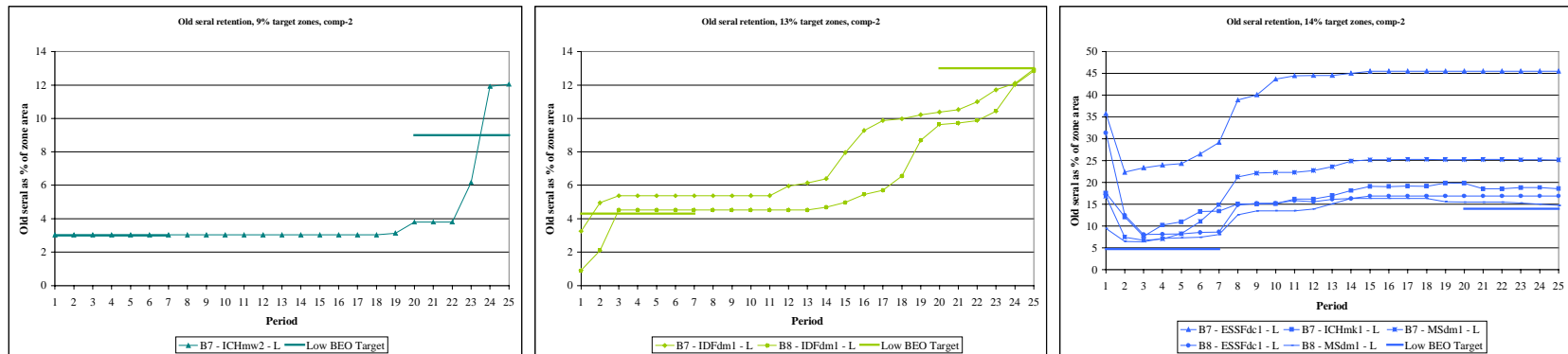


Figure 2.42 Composite without mature seral, old seral retention in low BEO zones



3. SUMMARY

The modified harvest forecasts developed for each of the sensitivity analyses presented in the preceding chapter are summarized numerically in the three following tables. To facilitate comparisons against the “new base case” forecast, the relative difference is also shown for each period in each scenario.

Table 3.1 Harvest flow summaries – part 1

Decade	newbase	thlb+10		thlb-10		nsy+10		nsy-10		msy+10		msy-10	
	m ³ /yr	m ³ /yr	% diff	m ³ /yr	% diff	m ³ /yr	% diff	m ³ /yr	% diff	m ³ /yr	% diff	m ³ /yr	% diff
1	205,600	213,580	3.9	189,350	-7.9	221,800	7.9	188,200	-8.5	209,100	1.7	205,600	0.0
2	205,600	213,580	3.9	189,350	-7.9	221,800	7.9	188,200	-8.5	209,100	1.7	205,600	0.0
3	205,600	213,580	3.9	189,350	-7.9	221,800	7.9	188,200	-8.5	209,100	1.7	205,600	0.0
4	205,600	213,580	3.9	189,350	-7.9	221,800	7.9	188,200	-8.5	209,100	1.7	205,600	0.0
5	205,600	213,580	3.9	189,350	-7.9	221,800	7.9	188,200	-8.5	209,100	1.7	205,600	0.0
6	205,600	213,580	3.9	189,350	-7.9	221,800	7.9	188,200	-8.5	209,100	1.7	205,600	0.0
7	205,600	213,580	3.9	189,350	-7.9	221,800	7.9	188,179	-8.5	209,100	1.7	189,200	-8.0
8	205,600	213,533	3.9	189,350	-7.9	221,800	7.9	188,200	-8.5	209,100	1.7	189,200	-8.0
9	205,600	213,580	3.9	189,350	-7.9	211,150	2.7	188,200	-8.5	209,100	1.7	189,200	-8.0
10	205,600	213,580	3.9	189,350	-7.9	211,150	2.7	188,200	-8.5	209,100	1.7	189,200	-8.0
11	205,600	213,580	3.9	189,350	-7.9	211,150	2.7	188,200	-8.5	209,100	1.7	189,200	-8.0
12	211,150	221,780	5.0	194,600	-7.8	211,150	0.0	214,100	1.4	235,600	11.6	189,200	-10.4
13	211,150	221,780	5.0	194,600	-7.8	211,150	0.0	214,100	1.4	235,600	11.6	189,200	-10.4
14	211,150	221,780	5.0	194,600	-7.8	211,150	0.0	214,100	1.4	235,600	11.6	189,200	-10.4
15	211,150	221,780	5.0	194,600	-7.8	211,150	0.0	214,100	1.4	235,600	11.6	189,100	-10.4
16	211,150	221,780	5.0	194,600	-7.8	211,150	0.0	214,100	1.4	235,600	11.6	189,100	-10.4
17	211,150	221,780	5.0	194,600	-7.8	211,150	0.0	214,100	1.4	235,600	11.6	189,100	-10.4
18	211,150	221,780	5.0	194,600	-7.8	211,150	0.0	214,100	1.4	235,600	11.6	189,100	-10.4
19	211,150	221,780	5.0	194,600	-7.8	211,150	0.0	214,100	1.4	235,600	11.6	189,100	-10.4
20	211,150	221,780	5.0	194,600	-7.8	211,150	0.0	214,100	1.4	235,600	11.6	189,100	-10.4
21	211,150	221,780	5.0	194,600	-7.8	211,150	0.0	214,100	1.4	235,600	11.6	189,100	-10.4
22	211,150	221,780	5.0	194,600	-7.8	211,150	0.0	214,100	1.4	235,600	11.6	189,100	-10.4
23	211,150	221,780	5.0	194,600	-7.8	211,150	0.0	214,100	1.4	235,600	11.6	189,100	-10.4
24	211,150	221,780	5.0	194,600	-7.8	211,150	0.0	214,100	1.4	235,600	11.6	189,100	-10.4
25	211,150	221,780	5.0	194,600	-7.8	211,150	0.0	214,100	1.4	235,600	11.6	189,100	-10.4

Table 3.2 Harvest flow summaries – part 2

Decade	newbase	mha+20		mha-20		regen+2		irm+5		irm-5		invsI	
	m ³ /yr	m ³ /yr	% diff	m ³ /yr	% diff	m ³ /yr	% diff	m ³ /yr	% diff	m ³ /yr	% diff	m ³ /yr	% diff
1	205,600	205,600	0.0	210,100	2.2	205,600	0.0	205,600	0.0	204,655	-0.5	205,600	0.0
2	205,600	205,600	0.0	210,100	2.2	205,600	0.0	205,600	0.0	204,655	-0.5	184,950	-10.0
3	205,600	205,600	0.0	210,100	2.2	205,600	0.0	205,600	0.0	204,655	-0.5	175,600	-14.6
4	205,600	205,600	0.0	210,100	2.2	205,600	0.0	205,600	0.0	204,655	-0.5	175,600	-14.6
5	205,600	184,950	-10.0	210,100	2.2	205,600	0.0	205,600	0.0	204,588	-0.5	166,365	-19.1
6	205,600	184,950	-10.0	210,100	2.2	205,600	0.0	205,600	0.0	204,655	-0.5	166,365	-19.1
7	205,600	169,450	-17.6	210,100	2.2	202,800	-1.4	205,600	0.0	204,655	-0.5	166,365	-19.1
8	205,600	169,450	-17.6	210,100	2.2	202,800	-1.4	205,600	0.0	204,655	-0.5	166,365	-19.1
9	205,600	169,450	-17.6	210,100	2.2	202,800	-1.4	205,600	0.0	204,655	-0.5	166,365	-19.1
10	205,600	205,600	0.0	210,100	2.2	202,800	-1.4	205,600	0.0	204,655	-0.5	166,365	-19.1
11	205,600	205,600	0.0	210,100	2.2	202,800	-1.4	205,600	0.0	204,655	-0.5	149,640	-27.2
12	211,150	216,100	2.3	199,300	-5.6	195,100	-7.6	211,150	0.0	211,150	0.0	142,200	-32.7
13	211,150	216,100	2.3	199,300	-5.6	195,100	-7.6	211,150	0.0	211,150	0.0	142,200	-32.7
14	211,150	216,100	2.3	199,300	-5.6	195,100	-7.6	211,150	0.0	211,150	0.0	142,200	-32.7
15	211,150	216,100	2.3	199,300	-5.6	195,100	-7.6	211,150	0.0	211,150	0.0	145,100	-31.3
16	211,150	216,100	2.3	199,300	-5.6	203,000	-3.9	211,150	0.0	211,150	0.0	145,100	-31.3
17	211,150	216,100	2.3	199,300	-5.6	203,000	-3.9	211,150	0.0	211,150	0.0	145,100	-31.3
18	211,150	216,100	2.3	199,300	-5.6	203,000	-3.9	211,150	0.0	211,150	0.0	145,100	-31.3
19	211,150	216,100	2.3	199,300	-5.6	203,000	-3.9	211,150	0.0	211,150	0.0	145,100	-31.3
20	211,150	216,100	2.3	199,300	-5.6	203,000	-3.9	211,150	0.0	211,150	0.0	145,100	-31.3
21	211,150	216,100	2.3	199,300	-5.6	203,000	-3.9	211,150	0.0	211,150	0.0	145,100	-31.3
22	211,150	216,100	2.3	199,300	-5.6	203,000	-3.9	211,150	0.0	211,150	0.0	145,100	-31.3
23	211,150	216,100	2.3	199,300	-5.6	203,000	-3.9	211,150	0.0	211,150	0.0	145,100	-31.3
24	211,150	216,100	2.3	199,300	-5.6	203,000	-3.9	211,150	0.0	211,150	0.0	145,100	-31.3
25	211,150	216,100	2.3	199,300	-5.6	203,000	-3.9	211,150	0.0	211,150	0.0	145,100	-31.3

Table 3.3 Harvest flow summaries – part 3

Decade	newbase	comp-1		comp-2	
	m ³ /yr	m ³ /yr	% diff	m ³ /yr	% diff
1	205,600	205,600	0.0	205,600	0.0
2	205,600	184,950	-10.0	205,600	0.0
3	205,600	184,950	-10.0	195,275	-5.0
4	205,600	175,658	-14.6	195,275	-5.0
5	205,600	175,658	-14.6	195,275	-5.0
6	205,600	175,658	-14.6	195,275	-5.0
7	205,600	175,658	-14.6	195,275	-5.0
8	205,600	175,658	-14.6	195,275	-5.0
9	205,600	175,658	-14.6	195,275	-5.0
10	205,600	195,600	-4.9	195,275	-5.0
11	205,600	195,600	-4.9	195,275	-5.0
12	211,150	195,600	-7.4	211,150	0.0
13	211,150	195,600	-7.4	211,150	0.0
14	211,150	195,600	-7.4	211,150	0.0
15	211,150	195,600	-7.4	211,150	0.0
16	211,150	195,600	-7.4	211,150	0.0
17	211,150	195,600	-7.4	211,150	0.0
18	211,150	195,600	-7.4	211,150	0.0
19	211,150	195,600	-7.4	211,150	0.0
20	211,150	195,600	-7.4	211,150	0.0
21	211,150	195,600	-7.4	211,150	0.0
22	211,150	195,600	-7.4	211,150	0.0
23	211,150	195,600	-7.4	211,150	0.0
24	211,150	195,600	-7.4	211,150	0.0
25	211,150	195,600	-7.4	211,150	0.0

REFERENCES

J.S. Thrower & Associates (JST), 1999. Statistical Adjustment of Dense Lodgepole Pine Polygons in the Boundary Forest District. Contract Rep. to Pope & Talbot. March 16, 1999. 12 pp.

Ministry of Forests, 2000. Boundary Timber Supply Area Analysis Report. 138 pp.