# TFL 39, MP #8

# Timber Supply Analysis

# Information Package

**October 1999**

Authorship: P.J. Kofoed, RPF

Silvicultural Assumptions and Yield Projections: N.J. Smith, RPF

# Table of Contents

## List of Tables

## List of Attachments

# 1.0 INTRODUCTION

This information package documents the assumptions and describes the modelling procedures that will be used in the Timber Supply Analysis (TSA) for Management Plan No. 8 of TFL 39.

Items missing from this draft document will be submitted as soon as they are available and will be included in the final report. These include derived information such as age class distributions and the estimated long-term harvesting landbase (net of future roads).

Not available at this time are the yield adjustments for older second-growth (established before 1962) areas that will be assigned yield tables according to regeneration models rather than from cruise data.

The Archaeological Overview Assessment (AOA) for Block 6 is expected to be available during the next month. Allowances for cultural heritage resources in Block 6 will then be determined.

Also a follow-up review of recreation, wildlife (Blocks 1 and 5) and soils (Block 7) netdowns is occurring. An agreement on adjustments to the Block 7 soils netdowns is expected in early November. These will be applied in the analysis. The recreation and wildlife issues will likely be addressed in the sensitivity analysis.

# 2.0 OPTIONS

The TSA is designed to provide information on the impacts of various forest management issues. These issues include:

- New Forest Management Strategy (The Forest Project)
- Management for Non-Timber Resources
- Operable Landbase Assumptions
- Deferred Areas
- Silviculture
- Yield Assumptions
- Site Productivity (Site Index)
- Minimum Harvest Ages
- Harvest Flow

**The Base Option (Option 1)** includes current management practices and procedures. Sections 5 to 8 focus on describing the assumptions used in the Base Option.

Additional options are run to examine impacts of the different issues. The following describes these options, summarizing for each option the assumptions that vary from the Base Option.

## 2.1 New Forest Management Strategy (The Forest Project)

**Option 2:** **Without Forest Project Assumptions.** Assumptions on Stewardship Zones and variable retention are excluded. Refer to Section 8.5.

**Option 3:** **Potential Gains from the Forest Project.** Examines the potential timber supply gains (due to variable retention) from some harvest in areas that are currently reserved. Refer to Section 8.5.

## 2.2 Non-Timber Resource

**Option 4:** **Landscape Biodiversity—Early and Mature + Old Seral Constraints.** Applies early and mature + old as well as old seral constraints. Refer to Section 8.4.2.

**Option 5:** **Landscape Biodiversity—Draft Biodiversity Emphasis.** Old seral requirements are applied according to the draft landscape units and biodiversity emphases. Refer to Section 8.4.2.

The draft Vancouver Island Landbase Plan (applies to Blocks 2 and 4) will be discussed in the context of this option. Option 5 includes old seral constraints according to the draft biodiversity emphases and landscape units. Additional old-growth retention in the Special Management Zones results from the assignment of old growth (in part of the Tsitika Watershed) and habitat (the White Watershed and part of the Tsitika Watershed) stewardship zones to these areas.

With aspatial analysis, it is difficult to accurately portray the benefits from the proposed reductions in spatial constraints (one meter green-up for adjacency and larger cut-block sizes) in the Enhanced Management Zones. A spatial blocking and scheduling tool is proposed for the twenty-year plan. It is expected that this approach will provide opportunities for exploring the sensitivity of harvest schedules to adjacency and other spatial constraints.

**Options 6:** **Variation of Visual Landscape Constraints.** The base option uses the top end of the range for the maximum allowable area below VEG. Option 6 uses the mid-point of the range. Refer to Section 8.3.2.

## 2.3 Timber Harvesting Landbase

**Option 7:** **Mature Timber Classified as Currently Uneconomic.** The base option excludes “uneconomic” timber. Option 7 allows harvest of the “uneconomic” timber over 100 years. The extended harvest period of 100 years corresponds to a strategy of taking advantage of periodic good market conditions to gradually harvest this timber. Refer to Section 5.3.8.

**Options 8/9: Vary the Timber Harvesting Landbase by Plus and Minus 5%.** A sensitivity analysis for uncertainties regarding the impacts of some issues on the timber harvesting landbase. Refer to Section 5.5.3.

## 2.4 Moratorium and Deferred Areas

The base option includes moratorium and deferred areas that have not being legally approved (i.e., by Order in Council). The timber supply impacts of these potential reserve areas are examined by comparing the results of options that exclude the areas of interest with results of the base option. Refer to Section 5.5.4.

**Option 10:** Block 1—Confederation Lake Park and Duck Lake**.**
**Option 11:** Block 5—Phillips Lake area.
**Option 12:** Block 6—Declared Protected Areas (Haida Gwaii/QCI). These are defined in the Islands Community Stability Initiative (ICSI) Consensus document of January 1996.
**Option 13:** Block 7—the Koeye Watershed and Fougnar Bay.

## 2.5 Silviculture

MB is proposing to complete an FRBC-funded forest level analysis of silvicultural strategies for TFL 39. This so-called “Type 2 Analysis” will be done with input from MoF and MoELP staff. The proposed schedule includes definition of management issues by November 1999, and submission of a final report by March 31, 2000. The analysis would utilize the data set prepared for the MP #8 analysis, will complement the MP #8 Timber Supply Analysis and will contribute towards the silviculture strategy for MP #8. Hence additional silviculture options are not included here.

## 2.6 Timber Yields

The purpose is to show the sensitivity of timber supply to changes in estimates of both mature and second-growth volumes per hectare (ha). Refer to Sections 5.3.1 and 6.

**Option 14:** Increase Mature Volumes by 10%.
**Option 15:** Decrease Mature Volumes by 10%.
**Option 16:** Increase Second-Growth Yields by 10%.
**Option 17:** Decrease Second-Growth Yields by 10%.

## 2.7 Site Productivity (Site Index)

**Option 18:** **Inventory File Site Indexes**. All other options use Site Indexes revised according to MB's biophysical selection tree approach. (Refer to Section 6.5.1) This comparison shows the timber supply implications of these revised Site Indexes relative to existing inventory file estimates of Site Index.

## 2.8 Minimum Harvest Ages

This comparison shows the sensitivity of timber supply to variation in minimum harvest ages. Refer to Section 7.3.2.

**Option 19:** Increase Minimum Harvest Ages by 10 years.

## 2.9 Harvest Flow Rules

A comparison of Options 20, 21 and the base option indicates the impacts of different harvest flow rules on harvest levels during the first 40 years.

**Option 20:** For each working circle, harvest levels are allowed to decline by a maximum of 15% per decade.

**Option 21:** For each working circle, initial harvest levels are defined according to those for the MP #7, base option, second and third periods. Harvest schedules will then be managed to achieve an "orderly" transition including avoiding medium-term harvest levels that are significantly below the long-term harvest level.

**TABLE 2-1. Summary of How Options Differ from the Base Option (Option 1)**

| Option No. | Description |
|---|---|
| 1 | Base Option: Current practices and procedures. |
| 2 | Excludes Stewardship Zones and Variable Retention. |
| 3 | Variable retention—potential gains from some harvest in areas that are currently reserved. |
| 4 | Landscape biodiversity—include early and mature + old seral stage constraints. |
| 5 | Landscape biodiversity—draft biodiversity emphases. |
| 6 | Visual landscape constraints—apply the mid-point of the range for the maximum allowable area below VEG. |
| 7 | Harvest mature timber classified as "currently uneconomic" over 100 years. |
| 8 | Increase the timber harvesting landbase by + 5% |
| 9 | Decrease the timber harvesting landbase by + 5% |
| 10 | Exclude Confederation Lake Park and the Duck Lake Protected Area in Block 1. |
| 11 | Exclude the Phillips Lake Area in Block 5. |
| 12 | Exclude the Haida Declared Protected Areas in Block 6. |
| 13 | Exclude the Koeye Watershed and Fougnar Bay in Block 7. |
| 14 | Increase mature volumes by 10%. |
| 15 | Decrease mature volumes by 10%. |
| 16 | Increase Second-Growth Yields by 10%. |
| 17 | Decrease Second-Growth Yields by 10%. |
| 18 | Apply inventory site indexes. |
| 19 | Increase minimum harvest ages by 10%. |
| 20 | Block harvest flow rule of a maximum 15% decline per decade. |

| | |
|---|---|
| 21 | Initial harvest levels from MP #7. |

# 3.0 MODEL

Woodstock, a high level programming language used for building forest estate models will be used to construct models for this analysis. These models (or scenarios) will apply a constrained linear programming approach to the problem.

Woodstock is used for strategic and operational planning by a number of organizations in Canada and in other countries.

# 4.0 INVENTORY ORGANIZATION

The TFL 39 forest inventory is organized to meet the objectives of the analysis and to utilize the large amount of data in a practical way.

## 4.1 Working Circles

The TFL is divided into six working circles which are defined by Blocks within the TFL. Each is analyzed separately. The working circles are as follows:

| Block # and Name | Operation (1999) |
|---|---|
| Block 1 (Powell River) | Stillwater Division |
| Block 2 (Adam River) | North Island Woodlands |
| Blocks 3 (Coast Islands) and 4 (Port Hardy) | Port McNeill Division |
| Block 5 (Phillips River) | Stillwater Division |
| Block 6 (Queen Charlotte Islands) | Queen Charlotte Division |
| Block 7 (Namu) | Port McNeill Division |

For each Block, management themes, forest cover data and the assignment of regeneration models (yield tables) collectively contribute towards the definitions of analysis units.

## 4.2 Management Themes

Coverages for the following management themes have been entered into the GIS database and hence incorporated into the analysis data sets.

- Visual landscape.
- Biodiversity landscape units.
- Biogeoclimatic Variant.
- Community watersheds and watersheds with CWAP restrictions.
- Avalanche run-out zones.
- MB Stewardship Zone.
- Physical operability
- Economic operability.

Since the data set is derived by intersecting the various coverages, the management themes may overlap spatially. Cover class constraints are used to model visual landscape, avalanche area, watershed (community water supply and CWAP) and landscape biodiversity objectives. The MB stewardship zones affect the allocation of silvicultural systems and allowances for additional old-growth areas and variable retention. The operability coverages allow analysis of a subset and reporting on results for the different operability classes.

## 4.3 Forest Cover Data and Regeneration Models

Three main attributes from the forest inventory (forest cover data) are used to characterize areas in the analysis. They are:

- Three-metre Site Index Classes 12 to 42.
  - Site Index is based on the leading species in each stand.
- Two Species Associations.
  - Douglas-fir species association, consisting of stands where the primary species is Douglas-fir, cypress or lodgepole pine.
  - Western hemlock species association, consisting of stands where the primary species is western hemlock, mountain hemlock, Sitka spruce, true firs or redcedar.

    The yield model Y-XENO has growth equations for the two species, Douglas-fir and western hemlock. Other species are grouped with these two for yield prediction.
- Five-year age classes for the younger forest. Mature forest (areas greater than 100 years-of-age at time of inventory, completed in 1964) is not differentiated by age.

Regeneration models (yield tables) are allocated across the inventory to represent a range of management situations.

# 5.0 DESCRIPTION OF LANDBASE

## 5.1 Current Timber Inventory

The first forest inventory was completed in 1964. Since then, it has been maintained and improved by new cruises of both mature and the immature forest. The figures used in this analysis are updated to December 31, 1995, and cover changes in landbase and ownership, logging, fire and reforestation.

The basic building block of the inventory is the “stand.” Each stand is identified by the following variables:

- A measure of site productivity: expressed by 3 m Site Index Classes.
- Age of immature by year established.
- Up to three species: in descending order of basal area.
- A measure of stocking:

- Volume class in mature and in older second growth cruised during the last 20 years.
- Basal area in cruised second-growth stands.
- Number of stems per hectare and distribution in younger stands.

These measures of inventory permit highly specific aggregation of similar stands for yield projection and analysis.

### *5.1.1 The Mature Inventory*

Since the original cruise in 1964, the inventory has been continuously upgraded and updated as follows:

- In 1966, mature volumes were recompiled, as required by MoF, to close utilization standards (15 cm top diameter for trees 22.5 cm and larger).
- In 1972, mature volumes were recompiled using new MB decay factors.
- In 1988 and 1999, operational cruising was combined with the inventory to improve the less intensive original inventory on these areas. A third of the total mature inventory is now derived from operational cruise information.

  On both occasions, in the remaining area (not included in the operational cruise), average lines were recalculated to reflect the samples remaining.
- The volume recompilation in 1999 used MB's 1973 loss factors and Kozak's Taper Equation Version 4.1. The dead useless category was removed from the TFL 39 inventory.

In addition, the inventory has been updated every year to reflect areas and volumes logged.

The 1995, mature volume less estimates of decay, before any other deductions, is 195 208 000 $m^3$. These volumes have been reduced for recent removals as Protected Areas. (Refer to Section 5.2.) A breakdown by Schedule A (Crown Grant and Timber Licenses) and Schedule B (Crown) is shown below:

| | **Volume (000 $m^3$)** |
|---|---|
| Schedule A | 32 132 |
| Schedule B | 163 070 |
| **TOTAL** | **195 208** |

Thirty-three percent of the mature timber volume was estimated from operational cruising, a more intensive cruise than the 1964 inventory.

Most of the remaining 1964 mature inventory (99%) has been subject to inventory audits during the last ten years. The results of this process are discussed in Section 5.3.1.

### *5.1.2 Inventory of the New Forest*

During the 1964/1965 forest inventories, all the immature forest was cruised and mapped. Each stand was described according to age, species, site index class and stocking.

The new forest inventory is updated by a two-stage process. First, the stand information for new, planted and natural stands is added into the inventory yearly. Any changes found by assessment of survival and free-growing status are also made annually.

Second, as the new stands reach "pole size", generally between 20 and 35 years, they are re-inventoried; site index is measured based on the growth of the new crop; and volume and basal area are obtained as measures of stocking. Since 1977, cruise data has been entered into the inventory database for 79 000 ha of second growth that have been re-inventoried.

### *5.1.3 Not Satisfactory Restocked (NSR) Inventory*

Areas logged or otherwise rendered unstocked, e.g., fire kill, are recorded in the inventory annually. For planning and control purposes, all NSR areas are categorized and summarized to show areas prescribed for site preparation, planting or natural regeneration, and the target date for achievement.

NSR areas are re-classified as second growth when they meet or exceed inventory requirements.

## 5.2 Inventory Changes since the MP #7 Timber Supply Analysis (July 1994)

All TFL 39 inventories including forest cover have been shifted from NAD 27 (map datum) to NAD 83. This will provide greater consistency with the mapbases of government agencies and other organizations in Coastal BC. On-going quality control checks on the NAD 83 map products are resulting in small changes.

At the same time as the NAD shift, tenure boundaries were adjusted according to the Surveyor General's Cadastre. Some of these map changes do not appear to agree with on the ground or legal descriptions of boundaries. In total, such differences are expected to be small and they will be addressed over time.

The total area of Block 1 has increased by approximately 3 000 ha, because of Timber Sales that have expired from the 30-year reserve.

The total area of TFL 39 at the end of 1995 is 804 050 ha compared to 803 727 ha for MP #7 (at the end of 1991). The gains in Block 1 have been offset by small reductions (0.5% or less) in the other Blocks, largely resulting from the shift to NAD 83.

More operational cruising has been combined with the inventory and mature inventory volumes have been recompiled. Refer to Section 5.1.1 above.

Protected areas have been legally defined in some areas of Blocks 2 and 4. In Block 2, this includes the Robson Bight (Tsitika) and Claude Elliot Protected Areas that were defined in the 1995 Park Amendment Act (Bill 53) and the Goal 2 area, the White River Pocket Wilderness Area. A small area of Block 4 is included in the lower Nimpkish Protected Area. Although these areas are legally protected areas, they have not yet been formally removed from the TFL. They are recognized operationally and are excluded from this analysis. Areas and mature volumes affected are summarized in Table 5-1.

**TABLE 5-1. Estimates of Area and Mature Volume Removals as Protected Areas**

| Block | Total Area (ha) | Mature Volume (000 $m^3$) |
|---|---|---|
| Block 2 | 3 892 | 2 637 |
| Block 4 | 32 | 0 |
| **TOTAL** | **3 924** | **2 637** |

## 5.3 Determination of the Timber Harvesting Landbase—The Base Option (Option 1)

Sections 5.3 to 5.6 document area and volume changes made for the various options in the analysis. They have been made in the order described in the following subsections. The timber harvesting landbase is the productive forest area and mature volume available for timber management after allowances are made for areas classified as physically inoperable, sensitive sites or non-timber resource values. Results are summarized in Tables 5-5 and 5-6 and in Section 5.4. Other landbase option netdowns are described in Section 5.5. Long-term adjustments for roads are listed in Section 5.6.

### *5.3.1 Mature Volume Adjustments*

**Audits of Mature Inventory Volumes**

The TFL 39 mature inventory includes areas cruised in 1964 and areas that have more recently (since the late 1970s) been cruised. Audits for most of the 1964 portion (original cruise) have been completed during the last 10 years. The last plots for the Block 5 comparison were completed in 1999. Block 3 is the only block that has not been audited. It has only a small volume of mature volume.

The audits have occurred in accessible timber (MCI) and inaccessible timber (MCIII) as typed in the 1964 inventory. Inventory volumes in the MCI type are compiled from samples, while in the MCIII type, volumes have been estimated from photo coding. More recent (1993) operability mapping has replaced the accessibility classification.

Because the MCIII volume estimates are not based on direct plot measurement, it was agreed that these volumes would be adjusted according to the results of the audit comparison. Refer to the correspondence with Resource Inventory Branch in Attachment 2. Table 5-2 shows that the audit volume estimate are all higher than the inventory photo coded estimate, varying from +8% for Block 6 to +56% for Block 2.

Since the MCI volume estimates are based on plots, these volumes are adjusted only if the audit result is significantly different from the inventory. A significant difference occurs only in Block 6 (QCI). The differences (non-significant) for the other blocks (refer to Table 5-2) will be discussed in a sensitivity analysis on mature volume estimates.

Table 5-2 summarizes the results for the comparison of audit results and inventory volumes.

**TABLE 5-2. Comparison of Audit and Inventory Mature Volumes**

| | Average Volume[(1)] ($m^3$ per ha) |
|---|---|

| Block | Accessibility | 1964 Inventory Cruise | Test Cruise | Ratio of test to inventory |
|---|---|---|---|---|
| 1 | MCI | 766 | 759 | 0.99 |
| 1 | MCIII | 564 | 738 | 1.31*a |
| 2 | MCI | 765 | 835 | 1.09 |
| 2 | MCIII | 494 | 770 | 1.56*a |
| 4 | MCI | 896 | 848 | 0.95 |
| 4 | MCIII | 551 | 696 | 1.26*a |
| 5 | MCI | 760 | 857 | 1.13 |
| 5 | MCIII | 556 | 848 | 1.53*a |
| 6 | MCI | 688 | 616 | 0.89*a |
| 6 | MCIII | 435 | 468 | 1.08a |
| 7 | MCI | 661 | 630 | 0.95 |
| 7 | MCIII | 427 | 543 | 1.27*a |

* Significant difference (95% level) according to paired t-test.
"a" This result is applied to the inventory mature volumes for the MP #8 analysis.
(1)Volumes are close utilization less decay.

The results of applying the resulting adjustments to the mature inventory are as follows.

**TABLE 5-3. Mature Volumes Adjusted According to the Audit Results** (000 $m^3$)

| Block | Inventory | Inventory Volume | Factor | Adjusted Volume |
|---|---|---|---|---|
| 1 | MCI | 3 272 | 1.0 | 3 272 |
| | MCIII | 3 059 | 1.31 | 4 007 |
| | OPC | 6 912 | 1.0 | 6 912 |
| | **TOTAL** | **13 243** | | **14 191** |
| 2 | MCI | 35 211 | 1.0 | 35 211 |
| | MCIII | 5 527 | 1.56 | 8 623 |
| | OPC | 26 852 | 1.0 | 26 852 |
| | **TOTAL** | **67 590** | | **70 686** |
| 3 | MC1 | 786 | 1.0 | 786 |
| | OPC | 987 | 1.0 | 987 |
| | **TOTAL** | **1 773** | | **1 773** |
| 4 | MCI | 3 524 | 1.0 | 3 524 |
| | MCIII | 1 124 | 1.26 | 1 416 |
| | OPC | 5 820 | 1.0 | 5 820 |
| | **TOTAL** | **10 468** | | **10 760** |
| 5 | MCI | 2 054 | 1.0 | 2 054 |
| | MCIII | 2 612 | 1.53 | 3 996 |
| | OPC | 2 026 | 1.0 | 2 026 |
| | **TOTAL** | **6 692** | | **8 076** |
| 6 | MCI | 56 365 | 0.89 | 50 165 |
| | MCIII | 4 272 | 1.08 | 4 614 |
| | OPC | 17 910 | 1.0 | 17 910 |
| | **TOTAL** | **78 547** | | **72 689** |
| 7 | MCI | 8 442 | 1.0 | 8 442 |
| | MCIII | 4 649 | 1.27 | 5 904 |
| | OPC | 3 804 | 1.0 | 3 804 |
| | **TOTAL** | **16 895** | | **18 150** |
| TOTAL | MCI | 109 654 | | 103 454 |
| | MCIII | 21 243 | | 28 560 |
| | OPC | 64 311 | | 64 311 |
| | **TOTAL** | **195 208** | | **196 325** |

(1) OPC–refers to Operational Cruising. MCI and MCIII refer to areas in the 1964 inventory (refer to the description above).

### Cull (Z) Grades

The mature timber inventory includes cull (Z) grade timber that is not part of the AAC as it is neither scaled nor charged as residue.

The following volume deductions (by block) for cull grades are based on the average proportions for the operational cruise portion of the inventory.

| Block | Cull (%) |
|---|---|
| Block 1 | 1.9 |
| Block 2 | 2.3 |
| Blocks 3 and 4 | 4.3 |
| Block 4 | 3.0 |
| Block 5 | 3.4 |
| Block 6 | 2.8 |

**Waste and Breakage**

From the start of annual residue surveys in 1967 until 1989, MB has measured all residue components including breakage and W2, resulting in a unique data set. Actual measured breakage and W2 are applied to the inventory as a netdown for analysis purposes. The average for the period from 1985 to 1989 of 7.82% is applied in the TSA (also was used in the MP #7 analysis).

In aggregate, the volume deductions for cull grades, waste and breakage applied to the mature inventory amount to 20 586 000 $m^3$.

### *5.3.2 Block 1, 30-Year Reserve*

Some timber sales were still active in 1995. They have since expired and reverted to Schedule B land as part of TFL 39. The total area involved is 1 268 ha with 218 000 $m^3$ of mature volume (before allowances for cull, waste and breakage).

### *5.3.3 Non-Forest and Non-productive Forest Areas*

Mapped non-forest areas of alpine, rock, water, swamp and roads occupy 86 803 ha.

Roads are included in the annual inventory update. An area allowance is made for all mapped roads (regardless of whether or not they are maintained). Major roads, e.g., highways, are handled as discrete polygons. An average width of 13 m is allowed for other roads, i.e., they are buffered at a width of 13 m in the GIS.

Non-productive forest areas, mainly defined as having inventory volume of less than 211 $m^3$ per ha and totalling 166 349 ha are excluded from the analysis.

### *5.3.4 Low Site*

With the decision tree procedure for assigning site index (approved for this analysis—refer to Section 6.5) there is no productive forest area of Site Index 10 and less.

Areas with site index in the three-metre Classes 12 and 15 are well represented in recent harvest statistics. The difference in mature forest inventory statistics between 1995 and 1997 for Blocks 2 to 7 provides an estimate of the recent timber harvest by site index class. Block 1 is not included because of other inventory changes that occurred in this block during 1996 and 1997. A comparison of these inventories indicates that of the area logged during 1996

and 1997, 2% was from Site Index Class 12 and 11% was from Site Index Class 15 (based on inventory file site index estimates). These proportions compare with the 2% and 19% of the mature productive forest that is SI 12 and SI 15, respectively, (again based on inventory site index estimates).

### *5.3.5 Physically Inoperable Areas*

The mature productive forest has been assessed for physical operability and for broad classes of logging methods. The assessment was first done in 1992/1993 for all blocks other than Block 6 (QCI). In 1998/1999 this operability mapping was reviewed and updated. In addition the same methodology was applied to Block 6. Refer to Attachment 2 for relevant correspondence. Three classes have been mapped:

- **Physically Inoperable Timber**
  Timber on productive land that is so steep and/or rocky, that it cannot be safely felled or yarded or a significant proportion of the volume could not be recovered. An area of 16 097 ha with 8 312 000 $m^3$ of timber is excluded from the working landbase as physically inoperable.
- **Conventional Harvest Systems**
  Includes timber on productive, physically operable land that is loggable by conventional methods, i.e., grapple, high-lead, hoe-chuck, skidder, etc.
- **Non-conventional Harvest Systems**
  Includes timber on productive, physically operable land that is loggable only by non-conventional methods. These include helicopter, balloon or long-line cable systems.

The new physical operability mapping in Block 6 has resulted in significantly less area classified as inoperable compared to the earlier accessibility mapping (to different standards) used in MP #7. The review also resulted in an increase in physically inoperable in Block 1 and a decrease in Block 7.

The area classified as non-conventional increased in Blocks 1, 5, 6 and 7. These changes reflect recognition of the difficulty and cost of building roads in some areas, particularly steep terrain with unstable soils.

### *5.3.6 Sensitive Sites and Non-Timber Resources (NTRs)*

Mapping of environmentally sensitive areas (ESAs) and other management constraint areas has occurred for the following concerns:

- Avalanche areas (Ea).
- Unstable soils (Es and 5-class mapping).
- Riparian management areas adjacent to streams, lakes and estuaries (Ef).
- Wildlife areas for deer, elk, grizzly bear and goats (Ew).
- Difficult regeneration areas (Ep).
- Community watersheds (Eh).
- Recreation (Er).
- Visual landscape (VQOs).

Refer to Section 8.0 for procedures and results. Significant areas have been identified and mapped as important for the above resources. They include areas of productive forest as well as non-productive forest and non-forest areas.

Many of these inventories identify netdowns to the timber harvesting landbase. For others, e.g., visual landscape, management is modified to meet cover class constraints. These are discussed in Section 8.3.

The net impact of exclusions for sensitive sites and non-timber resources on the productive operable landbase is 102 854 ha (19%) and 42 972 000 $m^3$ (26%) of mature volume.

This area impact is significantly (75%) higher than in MP #7. Major contributions to this difference include increased allowances for recreation, riparian reserves, sensitive soils (particularly Blocks 6 and 7) and wildlife in Blocks 1 and 5.

As noted in Sections 8.1.3 (recreation), 8.1.4 (wildlife) and 8.1.1 (soils) a follow-up review of netdowns for Er2 (recreation), Goat and Grizzly in Blocks 1 and 5 and sensitive soils in Block 7 is occurring. An agreement has been reached with the Region (MoF) soils specialist to apply reduced netdowns for soils in Block 7. This change will be applied in the analysis and described in the final report. It is expected that findings on the recreation and wildlife issues will be described and related to sensitivity analyses in the timber supply analysis report.

### *5.3.7 Deciduous*

The net forest area after making allowances for sensitive sites and non-timber resources includes 5 380 ha of deciduous forest. This includes stands with a deciduous species (usually red alder) as the leading species.

Approximately 250 ha of deciduous stands have been harvested, and generally converted to coniferous stands, over the six-year period from 1993 to 1998. Most of this activity has occurred in Block 1 where a large portion of the deciduous area is located. MP #7 has an AAC allocation of 40 000 $m^3$ to these deciduous areas.

For this analysis it is assumed that recent management practices continue. This is modelled by converting to conifer, 50% of the remaining deciduous area over a 50-year timeframe. Volumes in the existing deciduous stands will not be included in the harvest schedules, but will be referred to in a recommendation for an MP #8 AAC allocation for deciduous areas.

Other management possibilities for deciduous areas will be considered in the parallel analysis on silviculture strategy for TFL 39 (refer to Section 2.5).

### *5.3.8 Economic Operability*

Interpretation of economic operability differs from that of the MoF. MB's view is that over the next 100+ years, all of the mature timber, physically safe to fell and extract without unacceptable environmental damage, will be economically available for harvest.

It differs from the MoF position that the economically operable landbase for the TSA should be based on the last price cycle. The MoF's view is examined by classifying the landbase for "currently economic", "marginal" and "currently uneconomic".

Economic operability changes with changing markets, technologies and regulations. A classification based on detailed fieldwork is likely out of date by the time the information is plotted on maps. The approach taken here (and in MP #7) is to classify for economic operability based on inventory ($m^3$/ha, percentage pulp and species) characteristics as summarized in Table 5-4. Some minor revisions were made following review by MB and MoF field personnel.

**TABLE 5-4. Economic Operability Standards(1)**
Volume ($m^3$/ha)(2)

| | Conventional | | Non-conventional | |
|---|---|---|---|---|
| **Stand type** | **Uneconomic** | **Marginal** | **Uneconomic** | **Marginal** |
| Fir, Fir-Hem<br>Fir-Cedar | <271 | 271–380 | <434 | 434–542 |
| Hemlock<br>Hem–Bal | <325 | 325–434 | <488 | 488–597 |
| Hem-Bal-Cyp<br><40% X, Y, Z Grades<br>>40% C, Y, Z Grades | <325<br><434 | 325–434<br>434–542 | <434<br>>542 | 434–542<br>542–651 |
| Cedar<br><40% X, Y, Z Grades<br>>40% X, Y, Z Grades | <271<br><380 | 271–380<br>380–488 | <380<br><542 | 380–488<br>542–651 |

(1) These are based on characteristics identifiable in the inventory.
(2) Volume is Close U less decay. The volumes include adjustments resulting from the audits (Section 5.3.1).

Tables 5-7 and 5-8 show the resulting composition of the Option 1 Timber Harvesting Landbase. Classification is according to the two logging methods (conventional and non-conventional) and the two economic classes (economic and marginal).

An area of 15 811 ha with 4 987 000 $m^3$ of mature timber is excluded from the Base Option landbase as “currently uneconomic.”

For Blocks 1, 2, 5 and 7, the allowance for uneconomic areas and the area classified as marginal is lower than for MP #7. This is mainly because of higher volume estimates in MC III areas (Section 5.3.1) and secondarily because of higher netdowns for sensitive sites and non-timber values (Section 5.3.6). Conversely for Block 6 (QCI) the uneconomic and marginal categories are larger in area (than MP #7) because reduced estimates for MC I volumes (Section 5.3.1) are included in the determination of economic operability, whereas they were not included in MP #7.

### *5.3.9 Non-Spatial Allowances*

- An additional 1% allowance is made for management zones alongside small streams that are not mapped at the scale 1:20 000. Refer to Section 8.1.2. The resulting netdown is 4 109 ha and 1 197 000 $m^3$ of mature timber.
- Allowances for wildlife tree patches have been estimated and applied at the Block level. Refer to Section 8.4.1. The netdowns by Block are

| | Block | | | | | | |
|---|---|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **5** | **6** | **7** |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| % netdown for WTPs | 3.0 | 2.4 | 3.6 | 3.1 | 2.0 | 2.0 | 1.0 |

For the TFL the impact is 9 763 ha and 2 637 000 $m^3$ of mature timber.

- The Forest Project will result in increased reserves in old-growth stewardship zones and additional retention across the forest landscape. Incremental netdowns have been applied according to stewardship zone:

  - Timber Zone 5%
  - Habitat Zone 7.5%
  - Old-Growth Zone 70%

  The approach used to model the impacts of old-growth zones results in a high estimate of netdowns. Refer to Section 8.5. The total Forest Project allowance amounts to 35 783 ha and 14 158 000 $m^3$ of mature timber.

## TABLE 5-5. Adjustments to Obtain the Net Landbase by Working Circle (ha)

| | Block 1 | Block 2 | Block 3 | Block 4 | Block 5 | Block 6 | Block 7 | TOTAL |
|---|---|---|---|---|---|---|---|---|
| Total TFL Landbase | 185 711 | 203 065 | 15 747 | 51 541 | 47 411 | 240 311 | 56 339 | 800 125 |
| Plus 30-Year Reserve | 1 268 | | | | | | | 1 268 |
| | 186 979 | 203 065 | 15 747 | 51 541 | 47 411 | 240 311 | 56 339 | 801 393 |
| Less Non Forests | 36 931 | 9 680 | 580 | 4 618 | 13 042 | 15 616 | 6 336 | 86 803 |
| Net | 150 048 | 193 385 | 15 167 | 46 923 | 34 369 | 224 695 | 50 003 | 714 590 |
| Less Non Productive | 55 506 | 27 521 | 399 | 7 948 | 19 576 | 35 119 | 20 280 | 166 349 |
| Net Productive | 94 542 | 165 864 | 14 768 | 38 975 | 14 793 | 189 576 | 29 723 | 548 241 |
| Less Physically Inoperable | 4 349 | 6 985 | 127 | 374 | 1 739 | 1 135 | 1 388 | 16 097 |
| Net | 90 193 | 158 879 | 14 641 | 38 601 | 13 054 | 188 441 | 28 335 | 532 144 |
| Less Sensitive Sites & Non Timber Values | 14 622 | 26 607 | 1 289 | 5 151 | 3 437 | 43 117 | 8 631 | 102 854 |
| Net | 75 571 | 132 272 | 13 352 | 33 450 | 9 617 | 145 324 | 19 704 | 429 290 |
| Less Deciduous | 1 119 | 648 | 67 | 66 | 17 | 771 | 2 | 2 690 |
| Net | 74 452 | 131 624 | 13 285 | 33 384 | 9 600 | 144 553 | 19 702 | 426 600 |
| Less Uneconomic | 1 402 | 2 138 | 612 | 413 | 329 | 8 080 | 2 837 | 15 811 |
| Net | 73 050 | 129 486 | 12 673 | 32 971 | 9 271 | 136 473 | 16 865 | 410 789 |
| Less Allowance for Unmapped Streams | 730 | 1 295 | 127 | 330 | 93 | 1 365 | 169 | 4 109 |
| Net | 72 320 | 128 191 | 12 546 | 32 641 | 9 178 | 135 108 | 16 696 | 406 680 |
| Less WTPs | 2 170 | 3 077 | 452 | 1 012 | 183 | 2 702 | 167 | 9 763 |
| Net | 70 150 | 125 114 | 12 094 | 31 629 | 8 995 | 132 406 | 16 529 | 396 917 |
| Less Allowance for Variable Retention | 3 960 | 9 286 | 605 | 1 674 | 1 135 | 14 560 | 4 563 | 35 783 |
| **Option 1 Net Landbase** | **66 190** | **115 828** | **11 489** | **29 955** | **7 860** | **117 846** | **11 966** | **361 134** |

Inventory dated December 31, 1995

**TABLE 5-6. Adjustments to Obtain the Net Mature Volume by Working Circle (000 $m^3$)**

| | Block 1 | Block 2 | Block 3 | Block 4 | Block 5 | Block 6 | Block 7 | TOTAL |
|---|---|---|---|---|---|---|---|---|
| Total Productive Forest | 14 191 | 70 686 | 1 773 | 10 760 | 8 076 | 72 689 | 18 150 | 196 325 |
| Plus 30-Year Reserve | 218 | | | | | | | 218 |
| Net | 14 409 | 70 686 | 1 773 | 10 760 | 8 076 | 72 689 | 18 150 | 196 543 |
| Less Breakage, Waste 2 and Cull | 1 379 | 7 026 | 209 | 1 268 | 855 | 7 962 | 1 887 | 20 586 |
| Net | 13 030 | 63 660 | 1 564 | 9 492 | 7 221 | 64 727 | 16 263 | 175 957 |
| Less Physically Inoperable | 1 039 | 4 408 | 47 | 268 | 1 210 | 535 | 805 | 8 312 |
| Net | 11 991 | 59 252 | 1 517 | 9 224 | 6 011 | 64 192 | 15 458 | 167 645 |
| Less Sensitive Sites & Non Timber Values | 3 157 | 13 398 | 180 | 1 670 | 1 885 | 17 679 | 5 003 | 42 972 |
| Net | 8 834 | 45 854 | 1 337 | 7 554 | 4 126 | 46 513 | 10 455 | 124 673 |
| Less Uneconomic | 391 | 696 | 152 | 160 | 124 | 2 462 | 1 002 | 4 987 |
| Net | 8 443 | 45 158 | 1 185 | 7 394 | 4 002 | 44 051 | 9 453 | 119 686 |
| Less Allowance for Unmapped Streams | 84 | 452 | 12 | 74 | 40 | 440 | 95 | 1 197 |
| Net | 8 359 | 44 706 | 1 173 | 7 320 | 3 962 | 43 611 | 9 358 | 118 489 |
| Less WTPs | 251 | 1 073 | 42 | 227 | 79 | 872 | 93 | 2 637 |
| Net | 8 108 | 43 633 | 1 131 | 7 093 | 3 883 | 42 739 | 9 265 | 115 852 |
| Less Allowance for Variable Retention | 478 | 4 144 | 57 | 376 | 436 | 5 892 | 2 775 | 14 158 |
| **Option 1 Mature Volume** | **7 630** | **39 489** | **1 074** | **6 717** | **3 447** | **36 847** | **6 490** | **101 694** |

Inventory dated December 31, 1995

**TABLE 5-7. Base Option THLB[(1)] by Working Circle, Logging Method and Economic Class (ha)**

| | Block 1 | Block 2 | Block 3 | Block 4 | Block 5 | Block 6 | Block 7 | TOTAL |
|---|---|---|---|---|---|---|---|---|
| Convention Economic | 55 488 | 102 819 | 11 219 | 25 973 | 4 480 | 102 632 | 6 488 | 309 099 |
| Non-conventional Economic | 9 297 | 9 258 | 16 | 3 347 | 2 999 | 4 012 | 3 292 | 32 221 |
| Conventional Marginal | 598 | 2 755 | 254 | 318 | 58 | 9 174 | 878 | 14 035 |
| Non-conventional Marginal | 807 | 996 | 0 | 317 | 323 | 2 028 | 1 308 | 5 779 |
| **TOTAL** | 66 190 | 115 828 | 11 489 | 29 955 | 7 860 | 117 846 | 11 966 | 361 134 |

**TABLE 5-8. Base Option Mature Volumes by Working Circle, Logging Method and Economic Class (000 $m^3$)**

| | Block 1 | Block 2 | Block 3 | Block 4 | Block 5 | Block 6 | Block 7 | TOTAL |
|---|---|---|---|---|---|---|---|---|
| Convention Economic | 3 449 | 31 103 | 969 | 3 795 | 929 | 30 147 | 3 424 | 73 816 |
| Non-conventional Economic | 3 665 | 6 864 | 10 | 2 634 | 2 349 | 2 631 | 2 161 | 20 314 |
| Conventional Marginal | 173 | 1 068 | 95 | 133 | 21 | 3 098 | 321 | 4 909 |
| Non-conventional Marginal | 343 | 454 | 0 | 155 | 148 | 971 | 584 | 2 655 |
| **TOTAL** | 7 630 | 39 489 | 1 074 | 6 717 | 3 447 | 36 847 | 6 490 | 101 694 |

(1) Includes both mature and immature areas.

## 5.4 Summary of Base Option Adjustments

**TABLE 5-9. Summary of Base Option Landbase Adjustments: Totals Across the Seven Blocks**

| | | Percentages | |
|---|---|---|---|
| **Classification** | **Area (ha)** | **Total Area** | **Productive Forest** |
| Total Area | 801 393 | 100.0 | |
| Non-Forest | 86 803 | 10.8 | |
| Non-productive Forest | 166 349 | 20.8 | |
| **Productive Forest** | **548 241** | **68.4** | **100.0** |
| Physically Inoperable | 16 097 | 2.0 | 2.9 |
| Sensitive Sites and Non-Timber Values | 102 854 | 12.8 | 18.8 |
| Deciduous | 2 690 | 0.3 | 0.5 |
| Currently Uneconomic | 15 811 | 2.0 | 2.9 |
| Unmapped Streams | 4 109 | 0.5 | 0.8 |
| WTPs | 9 763 | 1.2 | 1.7 |
| Variable Retention | 35 783 | 4.5 | 6.5 |
| **Base Option THLB** | **361 134** | **45.1** | **65.9** |

**TABLE 5-10. Summary of Base Option Mature Volume Adjustments: Totals Across the Seven Blocks**

| **Classification** | **Mature Volume (3)** (000 $m^3$ AAC Utilization) | **Percentage of Total Mature Volume** |
|---|---|---|
| **Productive Forest** | **175 957** | **100.0** |
| Physically Inoperable | 8 312 | 4.7 |
| Sensitive Sites and Non-Timber Values | 42 972 | 24.4 |
| Currently Uneconomic | 4 987 | 2.8 |
| Unmapped Streams | 1 197 | 0.7 |
| WTPs | 2 637 | 1.5 |
| Variable Retention | 14 158 | 8.1 |
| **Base Option THLB** | **101 694** | **57.8** |

(3) Volumes are net of breakage, waste 2 and cull.

Age class distributions for the productive forest and the timber harvesting landbase will be included in the final report.

## 5.5 Landbase Options

A number of options examine the timber supply impacts of changes to the timber harvesting landbase. The resulting net timber harvesting landbases and corresponding mature volumes are summarized in Tables 5-11 and 5-12.

### *5.5.1 Variations to Forest Project Assumptions*

Option 2 does not make the extra allowances for variable retention and for reserve areas in old-growth zones. Some of this additional timber in some

landscape unit/variant combinations will be offset by extra reserves to meet the old seral cover class constraint (Section 8.4.2).

Option 3 examines potential gains in using the variable retention approach to access some timber in otherwise reserved areas. For simplicity in this option it is assumed that 5% of the mature timber in sensitive sites, non-timber resource areas and currently uneconomic timber may be accessed over the following 20 years.

**TABLE 5-11. Timber Harvesting Landbase by Landbase Option and Block (ha)**

| Option | Block 1 | Block 2 | Block 3 | Block 4 | Block 5 | Block 6 | Block 7 | Total |
|---|---|---|---|---|---|---|---|---|
| 1 | 66 190 | 115 828 | 11 489 | 29 955 | 7 860 | 117 846 | 11 966 | 361 134 |
| 2 | 70 150 | 125 114 | 12 094 | 31 629 | 8 995 | 132 406 | 16 529 | 396 917 |
| 3 | 67 084 | 117 362 | 11 595 | 30 263 | 8 054 | 120 513 | 12 548 | 367 409 |
| 7(1) | | | | | | | | |
| 8 | 69 499 | 121 619 | 12 064 | 31 453 | 8 253 | 123 728 | 12 565 | 379 192 |
| 9 | 62 880 | 110 037 | 10 915 | 28 458 | 7 467 | 111 954 | 11 368 | 343 079 |
| 10 | 64 937 | | | | | | | |
| 11 | | | | | 7 765 | | | |
| 12 | | | | | | (1) | | |
| 13 | | | | | | | 10 311 | |

(1)Areas and volumes will be summarized in the final report.

**TABLE 5-12. Available Mature Volume by Land-Base Option and Block (000 $m^3$)**

| Option | Block 1 | Block 2 | Block 3 | Block 4 | Block 5 | Block 6 | Block 7 | Total |
|---|---|---|---|---|---|---|---|---|
| 1 | 7 630 | 39 489 | 1 074 | 6 717 | 3 447 | 36 847 | 6 490 | 101 694 |
| 2 | 8 108 | 43 633 | 1 131 | 7 093 | 3 883 | 42 739 | 9 265 | 115 852 |
| 3 | 7 811 | 40 217 | 1 091 | 6 812 | 3 549 | 37 876 | 6 795 | 104 152 |
| 7(1) | | | | | | | | |
| 8 | 8 011 | 41 464 | 1 128 | 7 053 | 3 619 | 38 689 | 6 814 | 106 779 |
| 9 | 7 248 | 37 515 | 1 020 | 6 381 | 3 274 | 35 004 | 6 165 | 96 609 |
| 10 | 7 544 | | | | | | | |
| 11 | | | | | 3 445 | | | |
| 12 | | | | | | (1) | | |
| 13 | | | | | | | 5 457 | |

(1)Areas and volumes will be summarized in the final report.

### *5.5.2 Mature Timber Classified as Currently Uneconomic*

Option 7 includes the currently uneconomic timber in the timber harvesting landbase. It is assumed that this timber will be accessed gradually over time, according to market cycles and technical developments. This is simulated in the analysis by constraining the harvest of currently uneconomic timber to occur over 100 years.

### *5.5.3 Landbase Sensitivity*

Options 8 and 9 examine the sensitivity of timber supply to a 5% increase or decrease in the timber harvesting landbase.

### *5.5.4 Moratorium and Deferred Areas*

In Option 10 the Haslam Confederation and Duck Lake areas are excluded from the timber harvesting landbase for Block 1.

In Option 11 the Phillips Estuary/Lake area is excluded from Block 5. Most of this area has already been netted down because of wildlife and recreation values. Since, the additional impact of 95 ha is relatively small—it will not be subject to a separate analysis. This result will be discussed.

Block 6 includes parts of the following Haida Declared Protected Areas.

- Jiinanga (Northwest Morseby Island)
- Kamdis (part of Kumdis Island)
- Kun Xalaas (Cumshewa Head area)
- Qaysun (Boomchain Bay area)
- Tllall (Tlell Watershed)
- Tsuuguus Gandll (Security Inlet)
- Yaagun Siwaay (Yakoun Lake and River)

Option 12 excludes these deferred areas. The deferred areas affect a larger area than shown on a map, mainly through limiting access to adjacent areas. Such operational impacts will be discussed and may be presented as an additional option.

In Option 13 the Koeye Watershed and Fougnar Bay moratorium areas are excluded from Block 7. The impact of this option is significantly reduced as the Koeye watershed is currently zoned as an old-growth stewardship zone (Option 1).

## 5.6 Adjustments to Determine the Long-Term Landbase

Area reductions for future roads:

- **Mature Areas**

  For conventional harvesting areas, a 6% reduction in productive area is made after initial harvest. This is based on areas occupied by roads in recent survey results.

  No reductions will be made for future roads in non-conventional harvest areas. By definition, these areas will be harvested by aerial systems and they will be accessed by roads developed for adjacent conventional harvest areas.

- **Second-Growth Areas**

  For areas established prior to 1940, the productive area is reduced by 5% after the initial harvest. These areas were logged before truck logging. They are often of relatively easy terrain, with partial access provided by existing road systems.

*Estimates for future roads for Option 1 were not available when the October 1999 draft was written. They will be included in the final report..*

**TABLE 5-13. Long-Term Timber Harvesting Landbase for Option 1**
(after allowances for future roads) (ha)

| Block | Timber Harvesting Landbase | Less Future Roads | Long-Term Timber Harvesting Landbase |
|---|---|---|---|
| 1 | 66 190 | | |
| 2 | 115 828 | | |
| 3 | 11 489 | | |
| 4 | 29 955 | | |
| 5 | 7 860 | | |
| 6 | 117 846 | | |
| 7 | 11 966 | | |
| Total | 361 134 | | |

# 6.0 SILVICULTURAL ASSUMPTIONS AND YIELD PROJECTION

## 6.1 Silvicultural System Scenarios

**TABLE 6-1. Overview of Base Case Silvicultural Systems**

| *Zone* | *System* | *% Zone* | *Description* | *Age Type* | *Notes* |
|---|---|---|---|---|---|
| **Timber** | Retention Systems | 90 | aggregated, 10% left | even-aged | |
| | | | dispersed, 5% left | even-aged | |
| | Shelterwood | 10 | dispersed, 10% left | even-aged | group, uniform or natural on harsh sites |
| **Habitat** | Retention systems | 50 | aggregated, 15% left | even-aged | |
| | | | dispersed,15% left | even-aged | |
| | Shelterwood | 25 | generally aggregated, 15% left | even-aged | emphasis on group shelterwood |
| | Irregular Shelterwood | 13 | generally aggregated , 15% left | uneven-aged | leave groups, create more than two age classes |
| | Group selection | 12 | <1ha patches | uneven-aged but composed of small even-aged openings | at least three age classes; 20-40 year cutting cycle |
| **Old-Growth** | Irregular Shelterwood | 30 | dispersed + aggregated, 66% left | uneven-aged | create more than two age classes |
| | Group selection | 70 | 0.25ha-0.5ha (less than 1ha) patches | uneven-aged but composed of small even-aged openings | at least three age classes; 30-50 year cutting cycle |
| | second-growth areas | | thinning/ species conversion | portions of second-growth in Old-Growth Zone | restore old-growth attributes in previously cut stands |

Table 6-1 lists the silvicultural systems by stewardship zone developed as part of MB's Forest Project that will be used in the base case yield analysis. The amount of stand left refers to area (aggregated) or volume/basal area (dispersed) remaining within the specified cutblock. The allocation of Stewardship Zones is described in Section 8.5.

## 6.2 Forest Regeneration Models

### *6.2.1 Yield Table Sets*

Table 6-2 shows the yield model sets generated by XENO. The models incorporate a generalized range of planting, natural regeneration and management scenarios. Yield tables are summarized in Attachment 1. Figures 6-1 and 6-2 show the fir and hemlock basic yield curves for Site Index 27.

**TABLE 6-2. Regeneration Models used in the Timber Supply Analysis**

| Yield Table ID*, ** | No. of Planted Stems | No. of Natural Stems | Percent Survival Planted | Percent Distribution Natural | Regen Lag (natural) negative = early | Years of Natural Regen | Spaced 0 = no 1 = yes | Natural regen Site Index |
|---|---|---|---|---|---|---|---|---|
| **HEMLOCK** | | | | | | | | |
| h1 | 1 200 | 500 | 85 | 50 | -2 | 4 | 0 | |
| h2 | 1 200 | 1 200 | 90 | 75 | -2 | 5 | 0 | |
| h3 | 900 | 3 000 | 90 | 80 | -2 | 5 | 0 | |
| h4 | 800 | 12 000 | 85 | 100 | -3 | 8 | 0 | |
| h5 | | 600 | | 70 | | 5 | 0 | |
| h6 | | 1 500 | | 90 | | 5 | 0 | |
| h7a | | 6 000 | | 100 | | 5 | 0 | |
| h7b | | 6 000 | | 100 | | 5 | 1 | |
| h8a | | 12 000 | | 100 | | 5 | 0 | |
| h8b | | 12 000 | | 100 | | 5 | 1 | |
| *a = unspaced, b = spaced @ 15 years to 1200 sph | | | | | | | | |
| **DOUGLAS-FIR** | | | | | | | | |
| f1a | 1 200 | 500 | 85 | 60 | 0 | 4 | 0 | |
| f1b | 1 200 | 500 | 85 | 60 | 0 | 4 | 0 | Planted-3 m |
| f2a | 1 200 | 1 200 | 90 | 75 | 0 | 4 | 0 | |
| f2b | 1 200 | 1 200 | 90 | 75 | 0 | 4 | 0 | Planted- 3 m |
| f3a | 1 200 | 3 000 | 90 | 90 | -1 | 5 | 0 | |
| f3b | 1 200 | 3 000 | 90 | 90 | -1 | 5 | 0 | Planted- 3 m |
| f4 | | 600 | | 70 | 0 | 5 | 0 | |
| f5 | | 1 500 | | 90 | 0 | 5 | 0 | |
| f6 | | 3 000 | | 90 | 0 | 5 | 0 | |
| f7 | | 6 000 | | 90 | 0 | 5 | 0 | |
| **a = fir naturals, b = hemlock naturals if stand planted (Site Index 3 m lower than fir) | | | | | | | | |

### *6.2.2 Regeneration Allocation Framework*

The regeneration model framework is based on Stewardship Zone, biogeoclimatic variant (tempered by geographic locations), and two species associations (hemlock and fir). Previous approaches have been simplified to more easily and transparently apply the regeneration models. The framework is directed at resultant management (which implicitly incorporates current levels of management) that is necessary to achieve a specific yield rather than building from a natural succession model base as in TFL 39 MP #7. An important component is a broad scale representation of the future forest as envisaged by the Forest Project.

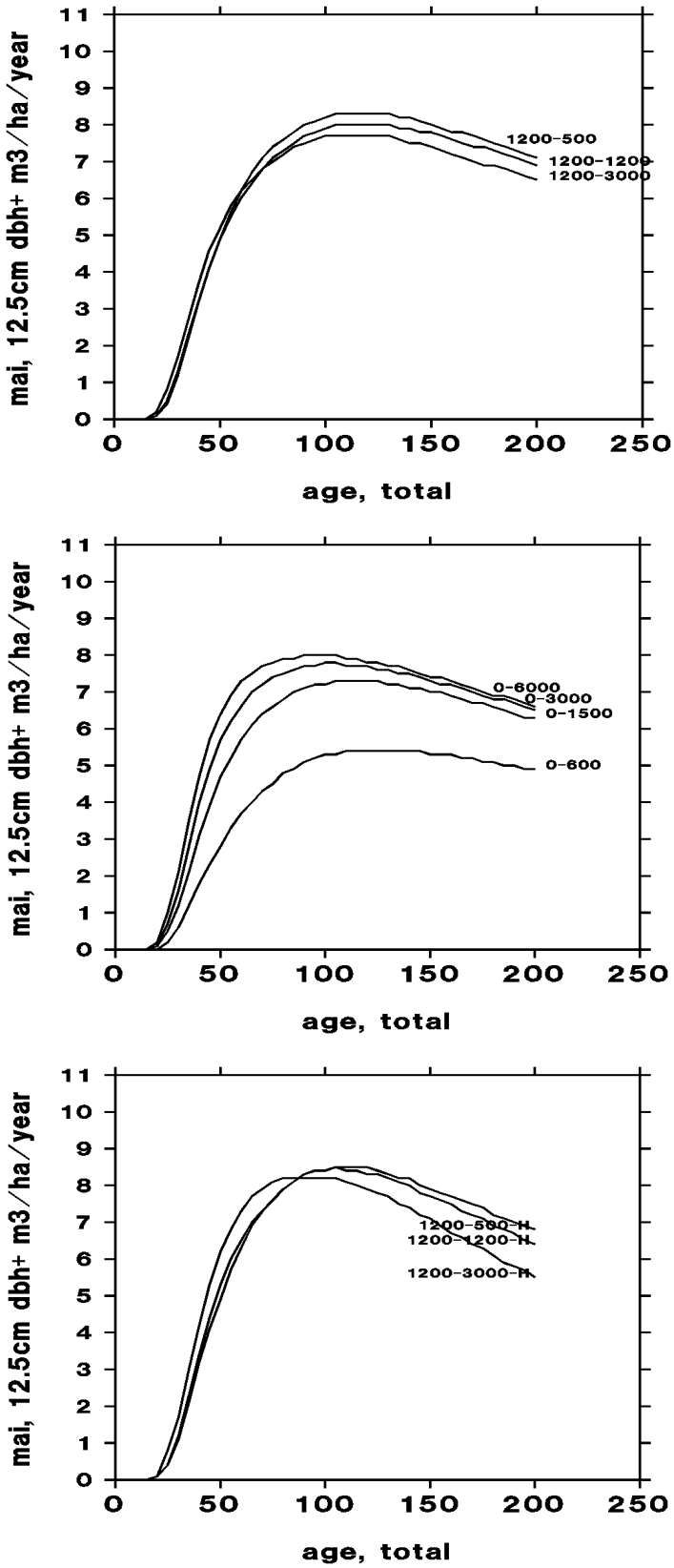


**FIGURE 6-1.** Mean annual increment ($m^3$/ha/year) for Douglas-fir for Site Index 27. Key: 1200–500-H means 1200 stems per ha planted, 500 naturals and the naturals were western hemlock (no suffix means naturals were fir).

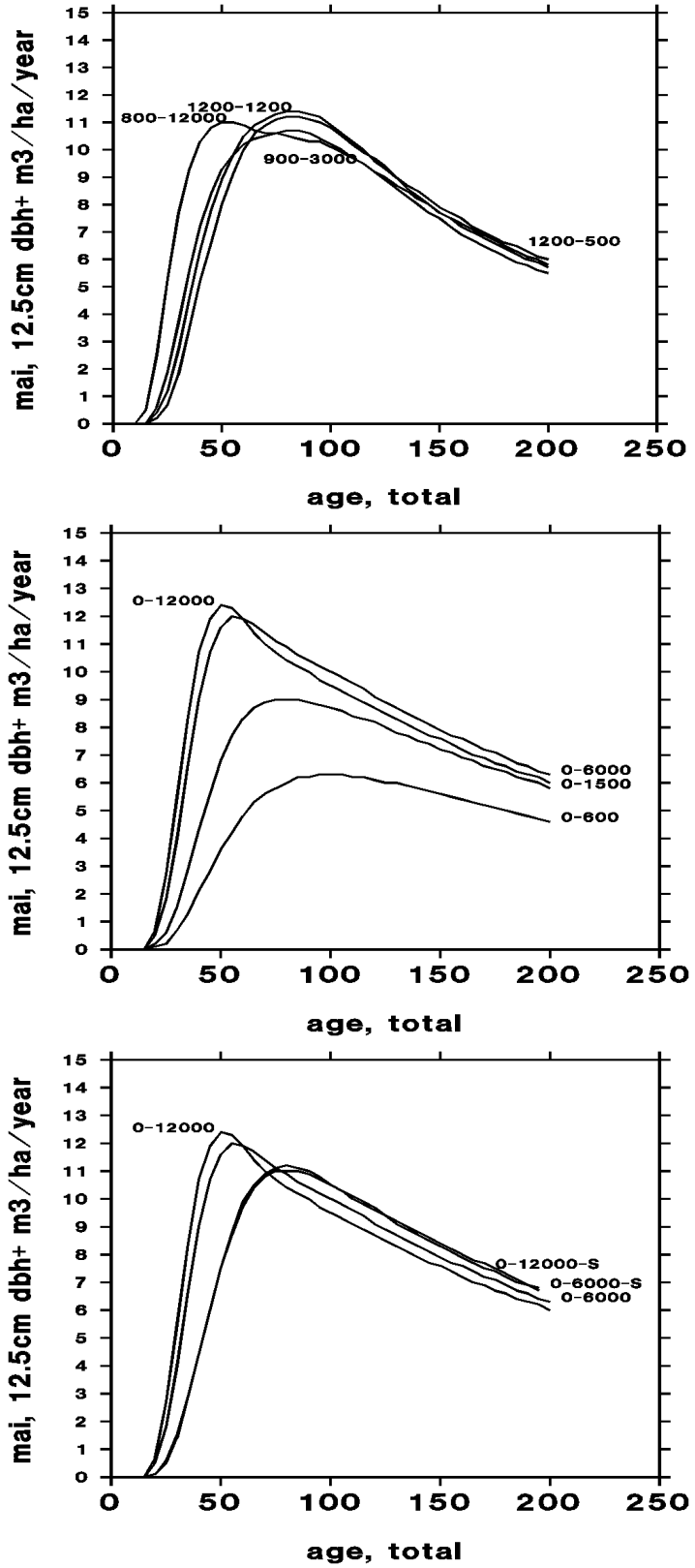


**FIGURE 6-2.** Mean annual increment ($m^3$/ha/year) for western hemlock for Site Index 27. Key: 0–12000-S means 0 stems per ha planted, 12000 naturals and spaced (S) to 1200 stems per ha at 15 years of age.

**TABLE 6-3. Description of Regeneration Model Allocation**

| Type | Allocation Table Set | Silvicultural System Type | Zone | Description |
|---|---|---|---|---|
| Hemlock I | Table 6-4a | Dispersed/aggregated retention | Timber/Habitat | ~80% planting or fill planting |
| Hemlock II | Table 6-4b | Shelterwood/Group selection | Timber/Habitat | 50% planting or fill planting |
| Hemlock III | Table 6-4c | Shelterwood/Group selection | Old Growth | 20% planting or fill planting |
| Hemlock I-1 | Table 6-4d | Dispersed/aggregated retention | Timber/Habitat | BLOCK 1: less regeneration |
| Hemlock II-1 | Table 6-4e | Shelterwood/Group selection | Timber/Habitat | BLOCK 1: less regeneration |
| Hemlock III-1 | Table 6-4f | Shelterwood/Group selection | Old Growth | BLOCK 1: less regeneration |
| Fir I | Table 6-4g | Dispersed/aggregated retention | Timber/Habitat | ~80% planting or fill planting |
| Fir II | Table 6-4h | Shelterwood/Group retention | Timber/Habitat | 60% planting or fill planting |
| Fir III | Table 6-4I | Shelterwood/Group selection | Old Growth | 30% planting or fill planting |

Table 6-3 gives an overview of nine regeneration model allocation scenarios. The scenarios are first classed by similar silvicultural system types: dispersed/aggregated retention form one type while shelterwood/group selection forms the other. The silvicultural system types are next allocated to the Stewardship Zones. The dispersed/aggregated type and shelterwood/group selection type are both assumed to be valid across both the Timber and Habitat Zones. (The Timber Zone will be managed mostly using dispersed/aggregated retention while the Habitat Zone will have a substantial shelterwood/group selection component.) Block 1 (Powell River) is distinguished in having lower natural regeneration amounts for hemlock only and is treated separately. The Old-Growth Zone has its own allocation set and is exclusively managed under shelterwood/group selection. In addition, portions of second growth in the Old-Growth Zone will be thinned to reduce stand density in some instances.

Planting is emphasized (~80% of landbase) under aggregated/dispersed retention; is approximately at 50% (hemlock) or 60%–80% (fir) under shelterwood/group selection in the Timber/Habitat Zone; and is approximately 20% (hemlock)–30% (fir) in the Old-Growth Zone.

Tables 6-4a to 6-4i contain the nine allocation sets listed in Table 6-3. Each of these tables lists the approximate area in each biogeoclimatic variant that is associated with a particular yield table. The tables are generalized attempts to mimic the range of current and future regeneration and management patterns. Tables 6-4a to 6-4i contain mean values for maximum mean annual increment derived from the yield tables for Site Index 27 to ***illustrate the relative impacts*** of any changes in area allocation across silvicultural system type and Stewardship Zone. These numbers are for demonstration purposes only and do not reflect the expected mean annual increment for each variant.

## TABLE 6-4a. Hemlock* I: Dispersed/Aggregated Retention—Timber/Habitat Zone

| | | | Hw CWHxm1 | | Hw CWHxm2 | | Hw CWHdm | | Hw CWHvm1 | | Hw CWHvm2 | | Hw CWHmm1 | | Hw CWHmm2 | | Hw MH | | Hw CWHwh1,2 | | Hw CWHvh2 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | plant | natural | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** |
| | ***1200*** | ***500*** | 11.2 | **100** | 11.2 | | 11.2 | | 11.2 | | 11.2 | | 11.2 | | 11.2 | | 11.2 | | 11.2 | | 11.2 | |
| dist | 85 | 50 | | | | | | | | | | | | | | | | | | | | |
| lag | 0 | -2 | | | | | | | | | | | | | | | | | | | | |
| age | | 4 | | | | | | | | | | | | | | | | | | | | |
| | ***1200*** | ***1200*** | 11.4 | | 11.4 | **80** | 11.4 | **80** | 11.4 | | 11.4 | | 11.4 | | 11.4 | | 11.4 | | 11.4 | **50** | 11.4 | |
| dist | 90 | 75 | | | | | | | | | | | | | | | | | | | | |
| lag | 0 | -2 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| | ***900*** | ***3000*** | 10.7 | | 10.7 | | 10.7 | | 10.7 | **35** | 10.7 | **35** | 10.7 | **30** | 10.7 | **30** | 10.7 | **30** | 10.7 | **10** | 10.7 | **40** |
| dist | 90 | 80 | | | | | | | | | | | | | | | | | | | | |
| lag | | -2 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| | ***800*** | ***12000*** | 11.0 | | 11.0 | | 11.0 | | 11.0 | **45** | 11.0 | **45** | 11.0 | **40** | 11.0 | **40** | 11.0 | **40** | 11.0 | | 11.0 | **40** |
| dist | 85 | 100 | | | | | | | | | | | | | | | | | | | | |
| lag | | -3 | | | | | | | | | | | | | | | | | | | | |
| age | | 8 | | | | | | | | | | | | | | | | | | | | |
| | | ***600*** | 6.3 | | 6.3 | | 6.3 | | 6.3 | | 6.3 | | 6.3 | | 6.3 | | 6.3 | | 6.3 | | 6.3 | |
| dist | | 70 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| | | ***1500*** | 9.0 | | 9.0 | | 9.0 | | 9.0 | | 9.0 | | 9.0 | | 9.0 | | 9.0 | | 9.0 | | 9.0 | |
| dist | | 90 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| | | ***6000*** | 12.0 | | 12.0 | **20** | 12.0 | **20** | 12.0 | **5** | 12.0 | **5** | 12.0 | **10** | 12.0 | **10** | 12.0 | **10** | 12.0 | | 12.0 | **10** |
| dist | | 100 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| spacing | | | 11.2 | | 11.2 | | 11.2 | | 11.2 | | 11.2 | | 11.2 | | 11.2 | | 11.2 | | 11.2 | | 11.2 | |
| | | ***12000*** | 12.4 | | 12.4 | | 12.4 | | 12.4 | **15** | 12.4 | **15** | 12.4 | **20** | 12.4 | **20** | 12.4 | **20** | 12.4 | **40** | 12.4 | **10** |
| dist | | 100 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| spacing | | | 11.1 | | 11.1 | | 11.1 | | 11.1 | | 11.1 | | 11.1 | | 11.1 | | 11.1 | | 11.1 | | 11.1 | |
| Total | | | 11.2 | **100** | 11.5 | **100** | 11.5 | **100** | 11.2 | **100** | 11.2 | **100** | 11.3 | **100** | 11.3 | **100** | 11.3 | **100** | 11.7 | **100** | 11.1 | **100** |

dist = survival planted/ distribution natural; lag = regen lag; age = age range natural.
a negative lag implies natural regeneration established before planting. Spacing to 1200 sph at 15 years age.
**mai = mean annual increment site index 27(30cm stump, 10cm top no OAF reductions) for demo purposes only**
**area = % area in biogeoclimatic variant**
*Hemlock-type: western/ mountain hemlock, sitka spruce, amabilis-fir, redcedar.

## TABLE 6-4b. Hemlock* II: Shelterwood/Group Selection—Timber/Habitat Zone

| | | | Hw CWHxm1 | | Hw CWHxm2 | | Hw CWHdm | | Hw CWHvm1 | | Hw CWHvm2 | | Hw CWHmm1 | | Hw CWHmm2 | | Hw MH | | Hw CWHwh1,2 | | Hw CWHvh2 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | plant | natural | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** |
| | ***1200*** | ***500*** | 11.2 | | 11.2 | | 11.2 | | 11.2 | | 11.2 | | 11.2 | | 11.2 | | 11.2 | | 11.2 | | 11.2 | |
| dist | 85 | 50 | | | | | | | | | | | | | | | | | | | | |
| lag | 0 | -2 | | | | | | | | | | | | | | | | | | | | |
| age | | 4 | | | | | | | | | | | | | | | | | | | | |
| | ***1200*** | ***1200*** | 11.4 | **90** | 11.4 | **30** | 11.4 | | 11.4 | | 11.4 | | 11.4 | | 11.4 | | 11.4 | | 11.4 | **40** | 11.4 | |
| dist | 90 | 75 | | | | | | | | | | | | | | | | | | | | |
| lag | 0 | -2 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| | ***900*** | ***3000*** | 10.7 | | 10.7 | **40** | 10.7 | **70** | 10.7 | **20** | 10.7 | **20** | 10.7 | **20** | 10.7 | **20** | 10.7 | **20** | 10.7 | **10** | 10.7 | **20** |
| dist | 90 | 80 | | | | | | | | | | | | | | | | | | | | |
| lag | | -2 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| | ***800*** | ***12000*** | 11.0 | | 11.0 | | 11.0 | | 11.0 | **35** | 11.0 | **30** | 11.0 | **30** | 11.0 | **30** | 11.0 | **30** | 11.0 | | 11.0 | **40** |
| dist | 85 | 100 | | | | | | | | | | | | | | | | | | | | |
| lag | | -3 | | | | | | | | | | | | | | | | | | | | |
| age | | 8 | | | | | | | | | | | | | | | | | | | | |
| | | ***600*** | 6.3 | | 6.3 | | 6.3 | | 6.3 | | 6.3 | | 6.3 | | 6.3 | | 6.3 | | 6.3 | | 6.3 | |
| dist | | 70 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| | | ***1500*** | 9.0 | **10** | 9.0 | **10** | 9.0 | **5** | 9.0 | **5** | 9.0 | **10** | 9.0 | **10** | 9.0 | **10** | 9.0 | | 9.0 | | 9.0 | **10** |
| dist | | 90 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| | | ***6000*** | 12.0 | | 12.0 | **20** | 12.0 | **20** | 12.0 | **5** | 12.0 | **5** | 12.0 | **10** | 12.0 | **10** | 12.0 | **20** | 12.0 | **10** | 12.0 | **10** |
| dist | | 100 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| spacing | | | 11.2 | | 11.2 | | 11.2 | | 11.2 | **5** | 11.2 | **5** | 11.2 | | 11.2 | | 11.2 | | 11.2 | **5** | 11.2 | |
| | | ***12000*** | 12.4 | | 12.4 | | 12.4 | **5** | 12.4 | **20** | 12.4 | **20** | 12.4 | **20** | 12.4 | **20** | 12.4 | **30** | 12.4 | **25** | 12.4 | **20** |
| dist | | 100 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| spacing | | | 11.1 | | 11.1 | | 11.1 | | 11.1 | **10** | 11.1 | **10** | 11.1 | **10** | 11.1 | **10** | 11.1 | | 11.1 | **10** | 11.1 | |
| Total | | | 11.2 | 100 | 11 | 100 | 11.0 | 100 | 11.2 | 100 | 11.1 | 100 | 11.1 | 100 | 11.1 | 100 | 11.6 | 100 | 11.6 | 100 | 11.1 | 100 |

dist = survival planted/ distribution natural; lag = regen lag; age = age range natural.
a negative lag implies natural regeneration established before planting. Spacing to 1200 sph at 15 years age.
**mai = mean annual increment site index 27(30cm stump, 10cm top no OAF reductions) for demo purposes only**
**area = % area in biogeoclimatic variant**
*Hemlock-type: western/ mountain hemlock, sitka spruce, amabilis-fir, redcedar.

## TABLE 6-4c. Hemlock* III: Shelterwood//Group Selection—Old Growth Zone

| | | | Hw CWHxm1 | | Hw CWHxm2 | | Hw CWHdm | | Hw CWHvm1 | | Hw CWHvm2 | | Hw CWHmm1 | | Hw CWHmm2 | | Hw MH | | Hw CWHwh1,2 | | Hw CWHvh2 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | plant | natural | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** |
| | ***1200*** | ***500*** | 11.2 | | 11.2 | | 11.2 | | 11.2 | | 11.2 | | 11.2 | | 11.2 | | 11.2 | | 11.2 | | 11.2 | |
| dist | 85 | 50 | | | | | | | | | | | | | | | | | | | | |
| lag | 0 | -2 | | | | | | | | | | | | | | | | | | | | |
| age | | 4 | | | | | | | | | | | | | | | | | | | | |
| | ***1200*** | ***1200*** | 11.4 | | 11.4 | | 11.4 | | 11.4 | | 11.4 | | 11.4 | | 11.4 | | 11.4 | | 11.4 | | 11.4 | |
| dist | 90 | 75 | | | | | | | | | | | | | | | | | | | | |
| lag | 0 | -2 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| | ***900*** | ***3000*** | 10.7 | **20** | 10.7 | **20** | 10.7 | **20** | 10.7 | **20** | 10.7 | **20** | 10.7 | **20** | 10.7 | **20** | 10.7 | **20** | 10.7 | **20** | 10.7 | **20** |
| dist | 90 | 80 | | | | | | | | | | | | | | | | | | | | |
| lag | | -2 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| | ***800*** | ***12000*** | 11.0 | | 11.0 | | 11.0 | | 11.0 | | 11.0 | | 11.0 | | 11.0 | | 11.0 | | 11.0 | | 11.0 | |
| dist | 85 | 100 | | | | | | | | | | | | | | | | | | | | |
| lag | | -3 | | | | | | | | | | | | | | | | | | | | |
| age | | 8 | | | | | | | | | | | | | | | | | | | | |
| | | ***600*** | 6.3 | **5** | 6.3 | **5** | 6.3 | **5** | 6.3 | **5** | 6.3 | **5** | 6.3 | **5** | 6.3 | **5** | 6.3 | **5** | 6.3 | **5** | 6.3 | **5** |
| dist | | 70 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| | | ***1500*** | 9 | **15** | 9 | **15** | 9 | **15** | 9 | **10** | 9 | **10** | 9 | **10** | 9 | **10** | 9 | **10** | 9 | **10** | 9 | **10** |
| dist | | 90 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| | | ***6000*** | 12 | **20** | 12 | **20** | 12 | **20** | 12 | **20** | 12 | **20** | 12 | **25** | 12 | **25** | 12 | **25** | 12 | **20** | 12 | **25** |
| dist | | 100 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| spacing | | | 11.2 | | 11.2 | | 11.2 | | 11.2 | **5** | 11.2 | **5** | 11.2 | **5** | 11.2 | **5** | 11.2 | | 11.2 | **5** | 11.2 | |
| | | ***12000*** | 12.4 | **40** | 12.4 | **40** | 12.4 | **40** | 12.4 | **30** | 12.4 | **30** | 12.4 | **30** | 12.4 | **30** | 12.4 | **40** | 12.4 | **30** | 12.4 | **40** |
| dist | | 100 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| spacing | | | 11.1 | | 11.1 | | 11.1 | | 11.1 | **10** | 11.1 | **10** | 11.1 | **5** | 11.1 | **5** | 11.1 | | 11.1 | **10** | 11.1 | |
| Total | | | 11.2 | **100** | 11.2 | **100** | 11.2 | **100** | 11.1 | **100** | 11.1 | **100** | 11.2 | **100** | 11.2 | **100** | 11.3 | **100** | 11.1 | **100** | 11.3 | **100** |

dist = survival planted/ distribution natural; lag = regen lag; age = age range natural.
a negative lag implies natural regeneration established before planting. Spacing to 1200 sph at 15 years age.
**mai = mean annual increment site index 27(30cm stump, 10cm top no OAF reductions) for demo purposes only**
**area = % area in biogeoclimatic variant**
*Hemlock-type: western/ mountain hemlock, sitka spruce, amabilis-fir, redcedar.

## TABLE 6-4d. Hemlock* I, Block 1: Dispersed/Aggregated Retention Timber/Habitat Zone

| | | | Hw CWHxm1 | | Hw CWHxm2 | | Hw CWHdm | | Hw CWHvm1 | | Hw CWHvm2 | | Hw CWHmm1 | | Hw CWHmm2 | | Hw MH | | Hw CWHwh1,2 | | Hw CWHvh2 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | plant | natural | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** |
| | ***1200*** | ***500*** | 11.2 | **100** | 11.2 | | 11.2 | | 11.2 | | 11.2 | | | | | | 11.2 | | | | | |
| dist | 85 | 50 | | | | | | | | | | | | | | | | | | | | |
| lag | 0 | -2 | | | | | | | | | | | | | | | | | | | | |
| age | | 4 | | | | | | | | | | | | | | | | | | | | |
| | ***1200*** | ***1200*** | 11.4 | | 11.4 | **80** | 11.4 | **80** | 11.4 | | 11.4 | | | | | | 11.4 | | | | | |
| dist | 90 | 75 | | | | | | | | | | | | | | | | | | | | |
| lag | 0 | -2 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| | ***900*** | ***3000*** | 10.7 | | 10.7 | | 10.7 | | 10.7 | **80** | 10.7 | **80** | | | | | 10.7 | **80** | | | | |
| dist | 90 | 80 | | | | | | | | | | | | | | | | | | | | |
| lag | | -2 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| | ***800*** | ***12000*** | 11.0 | | 11.0 | | 11.0 | | 11.0 | | 11.0 | | | | | | 11.0 | | | | | |
| dist | 85 | 100 | | | | | | | | | | | | | | | | | | | | |
| lag | | -3 | | | | | | | | | | | | | | | | | | | | |
| age | | 8 | | | | | | | | | | | | | | | | | | | | |
| | | ***600*** | 6.3 | | 6.3 | | 6.3 | | 6.3 | | 6.3 | | | | | | 6.3 | | | | | |
| dist | | 70 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| | | ***1500*** | 9.0 | | 9.0 | | 9.0 | | 9.0 | | 9.0 | | | | | | 9.0 | | | | | |
| dist | | 90 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| | | ***6000*** | 12.0 | | 12.0 | **20** | 12.0 | **20** | 12.0 | **20** | 12.0 | **20** | | | | | 12.0 | **20** | | | | |
| dist | | 100 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| spacing | | | 11.2 | | 11.2 | | 11.2 | | 11.2 | | 11.2 | | | | | | 11.2 | | | | | |
| | | ***12000*** | 12.4 | | 12.4 | | 12.4 | | 12.4 | | 12.4 | | | | | | 12.4 | | | | | |
| dist | | 100 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| spacing | | | 11.1 | | 11.1 | | 11.1 | | 11.1 | | 11.1 | | | | | | 11.1 | | | | | |
| Total | | | 11.2 | **100** | 11.5 | **100** | 11.5 | **100** | 11.0 | **100** | 11.0 | **100** | | | | | 11.0 | **100** | | | | |

dist = survival planted/ distribution natural; lag = regen lag; age = age range natural.
a negative lag implies natural regeneration established before planting. Spacing to 1200 sph at 15 years age.
**mai = mean annual increment site index 27(30cm stump, 10cm top no OAF reductions) for demo purposes only**
**area = % area in biogeoclimatic variant**
*Hemlock-type: western/ mountain hemlock, sitka spruce, amabilis-fir, redcedar.

## TABLE 6-4e. Hemlock* II, Block 1: Shelterwood/Group Selection—Timber/Habitat Zone

| | | | Hw CWHxm1 | | Hw CWHxm2 | | Hw CWHdm | | Hw CWHvm1 | | Hw CWHvm2 | | Hw CWHmm1 | | Hw CWHmm2 | | Hw MH | | Hw CWHwh1,2 | | Hw CWHvh2 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | plant | natural | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** |
| | ***1200*** | ***500*** | 11.2 | | 11.2 | | 11.2 | | 11.2 | | 11.2 | | | | | | 11.2 | | | | | |
| dist | 85 | 50 | | | | | | | | | | | | | | | | | | | | |
| lag | 0 | -2 | | | | | | | | | | | | | | | | | | | | |
| age | | 4 | | | | | | | | | | | | | | | | | | | | |
| | ***1200*** | ***1200*** | 11.4 | **90** | 11.4 | **10** | 11.4 | **10** | 11.4 | | 11.4 | | | | | | 11.4 | | | | | |
| dist | 90 | 75 | | | | | | | | | | | | | | | | | | | | |
| lag | 0 | -2 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| | ***900*** | ***3000*** | 10.7 | | 10.7 | **50** | 10.7 | **50** | 10.7 | **20** | 10.7 | **20** | | | | | 10.7 | **20** | | | | |
| dist | 90 | 80 | | | | | | | | | | | | | | | | | | | | |
| lag | | -2 | | | | | | | | | | | | | | | | | | | | |
| age | | 8 | | | | | | | | | | | | | | | | | | | | |
| | ***800*** | ***12000*** | 11.0 | | 11.0 | | 11.0 | | 11.0 | **35** | 11.0 | **30** | | | | | 11.0 | **30** | | | | |
| dist | 85 | 100 | | | | | | | | | | | | | | | | | | | | |
| lag | | -3 | | | | | | | | | | | | | | | | | | | | |
| age | | 8 | | | | | | | | | | | | | | | | | | | | |
| | | ***600*** | 6.3 | | 6.3 | | 6.3 | | 6.3 | | 6.3 | | | | | | 6.3 | | | | | |
| dist | | 70 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| | | ***1500*** | 9.0 | **10** | 9.0 | **10** | 9.0 | **10** | 9.0 | **10** | 9.0 | **15** | | | | | 9.0 | **10** | | | | |
| dist | | 90 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| | | ***6000*** | 12.0 | | 12.0 | **30** | 12.0 | **30** | 12.0 | **20** | 12.0 | **20** | | | | | 12.0 | **40** | | | | |
| dist | | 100 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| spaced | | | 11.2 | | 11.2 | | 11.2 | | 11.2 | **15** | 11.2 | **15** | | | | | 11.2 | | | | | |
| | | ***12000*** | 12.4 | | 12.4 | | 12.4 | | 12.4 | | 12.4 | | | | | | 12.4 | | | | | |
| dist | | 100 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| spaced | | | 11.1 | | 11.1 | | 11.1 | | 11.1 | | 11.1 | | | | | | 11.1 | | | | | |
| Total | | | 11.2 | 100 | 11.0 | 100 | 11.0 | 100 | 11.0 | 100 | 10.9 | 100 | 0 | 0 | 0 | 0 | 11.1 | 100 | 0 | 0 | | |

dist = survival planted/ distribution natural; lag = regen lag; age = age range natural.
a negative lag implies natural regeneration established before planting. Spacing to 1200 sph at 15 years age.
**mai = mean annual increment site index 27(30cm stump, 10cm top no OAF reductions) for demo purposes only**
**area = % area in biogeoclimatic variant**
*Hemlock-type: western/ mountain hemlock, sitka spruce, amabilis-fir, redcedar.

## TABLE 6-4f. Hemlock* III, Block 1: Shelterwood/Group Selection—Old Growth Zone

| | | | Hw CWHxm1 | | Hw CWHxm2 | | Hw CWHdm | | Hw CWHvm1 | | Hw CWHvm2 | | Hw CWHmm1 | | Hw CWHmm2 | | Hw MH | | Hw CWHwh1,2 | | Hw CWHvh2 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | plant | natural | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** |
| | ***1200*** | ***500*** | 11.2 | | 11.2 | | 11.2 | | 11.2 | | 11.2 | | | | | | 11.2 | | | | | |
| dist | 85 | 50 | | | | | | | | | | | | | | | | | | | | |
| lag | 0 | -2 | | | | | | | | | | | | | | | | | | | | |
| age | | 4 | | | | | | | | | | | | | | | | | | | | |
| | ***1200*** | ***1200*** | 11.4 | | 11.4 | | 11.4 | | 11.4 | | 11.4 | | | | | | 11.4 | | | | | |
| dist | 90 | 75 | | | | | | | | | | | | | | | | | | | | |
| lag | 0 | -2 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| | ***900*** | ***3000*** | 10.7 | **20** | 10.7 | **20** | 10.7 | **20** | 10.7 | **20** | 10.7 | **20** | | | | | 10.7 | **20** | | | | |
| dist | 90 | 80 | | | | | | | | | | | | | | | | | | | | |
| lag | | -2 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| | ***800*** | ***12000*** | 11.0 | | 11.0 | | 11.0 | | 11.0 | | 11.0 | | | | | | 11.0 | | | | | |
| dist | 85 | 100 | | | | | | | | | | | | | | | | | | | | |
| lag | | -3 | | | | | | | | | | | | | | | | | | | | |
| age | | 8 | | | | | | | | | | | | | | | | | | | | |
| | | ***600*** | 6.3 | **5** | 6.3 | **5** | 6.3 | **5** | 6.3 | **5** | 6.3 | **5** | | | | | 6.3 | **5** | | | | |
| dist | | 70 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| | | ***1500*** | 9 | **15** | 9 | **15** | 9 | **15** | 9 | **15** | 9 | **15** | | | | | 9 | **15** | | | | |
| dist | | 90 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| | | ***6000*** | 12 | **60** | 12 | **60** | 12 | **60** | 12 | **50** | 12 | **50** | | | | | 12 | **60** | | | | |
| dist | | 100 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| spacing | | | 11.2 | | 11.2 | | 11.2 | | 11.2 | **10** | 11.2 | **10** | | | | | 11.2 | | | | | |
| | | ***12000*** | 12.4 | | 12.4 | | 12.4 | | 12.4 | | 12.4 | | | | | | 12.4 | | | | | |
| dist | | 100 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| spacing | | | 11.1 | | 11.1 | | 11.1 | | 11.1 | | 11.1 | | | | | | 11.1 | | | | | |
| Total | | | 11.0 | **100** | 11.0 | **100** | 11.0 | **100** | 10.9 | **100** | 10.9 | **100** | | | | | 11.0 | **100** | | | | |

dist = survival planted/ distribution natural; lag = regen lag; age = age range natural.
a negative lag implies natural regeneration established before planting. Spacing to 1200 sph at 15 years age.
**mai = mean annual increment site index 27(30cm stump, 10cm top no OAF reductions) for demo purposes only**
**area = % area in biogeoclimatic variant**
*Hemlock-type: western/ mountain hemlock, sitka spruce, amabilis-fir, redcedar.

## TABLE 6-4g. Fir* I: Dispersed/Aggregated Retention—Timber/Habitat Zone

| | | | Fd CWHxm1 | | Fd CWHxm2 | | Fd CWHdm | | Fd CWHvm1 | | Fd CWHvm2 | | Fd CWHmm1 | | Fd CWHmm2 | | Fd MH | | Fd CWHwh1,2 | | Fd CWHvh2 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | plant | natural | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** |
| | ***1200*** | ***500*** | 8.3 | **100** | 8.3 | **100** | 8.3 | **90** | 8.5 | **90** | 8.5 | | 8.5 | | 8.5 | | 8.5 | | 8.5 | | 8.5 | **80** |
| dist | 85 | 60 | | | | | | | | | | | | | | | | | | | | |
| lag | | 0 | | | | | | | | | | | | | | | | | | | | |
| age | | 4 | | | | | | | | | | | | | | | | | | | | |
| | ***1200*** | ***1200*** | 8 | | 8 | | 8 | | 8.5 | | 8.5 | **80** | 8.5 | **80** | 8.5 | **80** | 8.5 | **80** | 8.5 | **50** | 8.5 | |
| dist | 90 | 75 | | | | | | | | | | | | | | | | | | | | |
| lag | | 0 | | | | | | | | | | | | | | | | | | | | |
| age | | 4 | | | | | | | | | | | | | | | | | | | | |
| | ***1200*** | ***3000*** | 7.7 | | 7.7 | | 7.7 | | 8.2 | | 8.2 | | 8.2 | | 8.2 | | 8.2 | | 8.2 | **10** | 8.2 | |
| dist | 90 | 90 | | | | | | | | | | | | | | | | | | | | |
| lag | | -1 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| | ***800*** | ***12000*** | | | | | | | | | | | | | | | | | | | | |
| dist | 80 | 90 | | | | | | | | | | | | | | | | | | | | |
| lag | | -2 | | **not used** | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| | | ***600*** | 5.4 | | 5.4 | | 5.4 | | 5.4 | | 5.4 | | 5.4 | | 5.4 | | 5.4 | | 5.4 | | 5.4 | |
| dist | | 70 | | | | | | | | | | | | | | | | | | | | |
| lag | | | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| | | ***1500*** | 7.3 | | 7.3 | | 7.3 | **10** | 7.3 | **10** | 7.3 | | 7.3 | | 7.3 | | 7.3 | | 7.3 | | 7.3 | |
| dist | | 90 | | | | | | | | | | | | | | | | | | | | |
| lag | | | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| | | ***3000*** | 7.8 | | 7.8 | | 7.8 | | 7.8 | | 7.8 | **20** | 7.8 | **20** | 7.8 | **20** | 7.8 | **20** | 7.8 | **40** | 7.8 | **20** |
| dist | | 90 | | | | | | | | | | | | | | | | | | | | |
| lag | | | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| | | ***6000*** | 8.0 | | 8.0 | | 8.0 | | 8.0 | | 8.0 | | 8.0 | | 8.0 | | 8.0 | | 8.0 | | 8.0 | |
| dist | | 90 | **used for inventory projection only at present** | | | | | | | | | | | | | | | | | | | |
| lag | | | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| Total | | | 8.3 | **100** | 8.3 | **100** | 8.2 | **100** | 8.4 | **100** | 8.4 | **100** | 8.4 | **100** | 8.4 | **100** | 8.4 | **100** | 8.2 | **100** | 8.4 | **100** |

dist = survival planted/ distribution natural; lag = regen lag; age = age range natural. Natural regen in planted stands = 100% fir in xm1/xm2/dm; hemlock in rest (Hw site index 3m lower than planted fir)

a negative lag implies natural regeneration established before planting. 100% natural regeneration stands assume 100% fir.

**mai = mean annual increment site index 27(30cm stump, 10cm top no OAF reductions) for demo purposes only**

**area = % area in biogeoclimatic variant** *Fir-type: Douglas-fir, yellow cypress, lodgepole pine

## TABLE 6-4h. Fir* II: Shelterwood/Group Selection–Timber/Habitat Zone

| | | | Fd CWHxm1 | | Fd CWHxm2 | | Fd CWHdm | | Fd CWHvm1 | | Fd CWHvm2 | | Fd CWHmm1 | | Fd CWHmm2 | | Fd MH | | Fd CWHwh1,2 | | Fd CWHvh2 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | plant | natural | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** | **mai** | **area** |
| | ***1200*** | ***500*** | 8.3 | | 8.3 | | 8.3 | | 8.5 | | 8.5 | | 8.5 | | 8.5 | | 8.5 | | 8.5 | | 8.5 | |
| dist | 85 | 60 | | | | | | | | | | | | | | | | | | | | |
| lag | | 0 | | | | | | | | | | | | | | | | | | | | |
| age | | 4 | | | | | | | | | | | | | | | | | | | | |
| | ***1200*** | ***1200*** | 8 | **80** | 8 | **80** | 8 | **80** | 8.5 | **60** | 8.5 | | 8.5 | | 8.5 | | 8.5 | | 8.5 | **10** | 8.5 | **60** |
| dist | 90 | 75 | | | | | | | | | | | | | | | | | | | | |
| lag | | 0 | | | | | | | | | | | | | | | | | | | | |
| age | | 4 | | | | | | | | | | | | | | | | | | | | |
| | ***1200*** | ***3000*** | 7.7 | | 7.7 | | 7.7 | | 8.2 | | 8.2 | **60** | 8.2 | **60** | 8.2 | **60** | 8.2 | **60** | 8.2 | **50** | 8.2 | |
| dist | 90 | 90 | | | | | | | | | | | | | | | | | | | | |
| lag | | -1 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| | ***800*** | ***12000*** | | | | | | | | | | | | | | | | | | | | |
| dist | 80 | 90 | | | | | | | | | | | | | | | | | | | | |
| lag | | -2 | | **not used** | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| | | ***600*** | 5.4 | | 5.4 | | 5.4 | | 5.4 | | 5.4 | | 5.4 | | 5.4 | | 5.4 | | 5.4 | | 5.4 | |
| dist | | 70 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| | | ***1500*** | 7.3 | **10** | 7.3 | **10** | 7.3 | **10** | 7.3 | **20** | 7.3 | **20** | 7.3 | **20** | 7.3 | **20** | 7.3 | **20** | 7.3 | | 7.3 | **20** |
| dist | | 90 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| | | ***3000*** | 7.8 | **10** | 7.8 | **10** | 7.8 | **10** | 7.8 | **20** | 7.8 | **20** | 7.8 | **20** | 7.8 | **20** | 7.8 | **20** | 7.8 | **40** | 7.8 | **20** |
| dist | | 90 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| | | ***6000*** | 8.0 | | 8.0 | | 8.0 | | 8.0 | | 8.0 | | 8.0 | | 8.0 | | 8.0 | | 8.0 | | 8.0 | |
| dist | | 90 | **used for inventory projection only at present** | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| Total | | | 7.9 | **100** | 7.9 | **100** | 7.9 | **100** | 8.1 | **100** | 7.9 | **100** | 7.9 | **100** | 7.9 | **100** | 7.9 | **100** | 8.1 | **100** | 8.1 | **100** |

dist = survival planted/ distribution natural; lag = regen lag; age = age range natural. Natural regen in planted stands =100% fir in xm1/xm2/dm; hemlock in rest (Hw site index 3m lower than planted fir)

a negative lag implies natural regeneration established before planting. 100% natural regeneration stands assume 100% fir.

**mai = mean annual increment site index 27(30cm stump, 10cm top no OAF reductions) for demo purposes only**

**area = % area in biogeoclimatic variant**

*Fir-type: Douglas-fir, yellow cypress, lodgepole pine

## TABLE 6-4i. Fir* III—Shelterwood/Group Selection—Old-Growth Zone

| | | | Fd CWHxm1 | | Fd CWHxm2 | | Fd CWHdm | | Fd CWHvm1 | | Fd CWHvm2 | | Fd CWHmm1 | | Fd CWHmm2 | | Fd MH | | Fd CWHwh1,2 | | Fd CWHvh2 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | plant | natural | mai | area | mai | area | mai | area | mai | area | mai | area | mai | area | mai | area | mai | area | mai | area | mai | area |
| | ***1200*** | ***500*** | 8.3 | | 8.3 | | 8.3 | | 8.5 | | 8.5 | | 8.5 | | 8.5 | | 8.5 | | 8.5 | | 8.5 | |
| dist | 85 | 60 | | | | | | | | | | | | | | | | | | | | |
| lag | | 0 | | | | | | | | | | | | | | | | | | | | |
| age | | 4 | | | | | | | | | | | | | | | | | | | | |
| | ***1200*** | ***1200*** | 8 | **30** | 8 | **30** | 8 | **30** | 8.5 | **30** | 8.5 | **30** | 8.5 | **30** | 8.5 | **30** | 8.5 | **30** | 8.5 | **30** | 8.5 | **30** |
| dist | 90 | 75 | | | | | | | | | | | | | | | | | | | | |
| lag | | 0 | | | | | | | | | | | | | | | | | | | | |
| age | | 4 | | | | | | | | | | | | | | | | | | | | |
| | ***1200*** | ***3000*** | 7.7 | | 7.7 | | 7.7 | | 8.2 | | 8.2 | | 8.2 | | 8.2 | | 8.2 | | 8.2 | | 8.2 | |
| dist | 90 | 90 | | | | | | | | | | | | | | | | | | | | |
| lag | | -1 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| | ***800*** | ***12000*** | | | | | | | | | | | | | | | | | | | | |
| dist | 80 | 90 | | | | | | | | | | | | | | | | | | | | |
| lag | | -2 | | **not used** | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| | | ***600*** | 5.4 | **5** | 5.4 | **5** | 5.4 | **5** | 5.4 | **5** | 5.4 | **5** | 5.4 | **5** | 5.4 | **5** | 5.4 | **5** | 5.4 | | 5.4 | **5** |
| dist | | 70 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| | | ***1500*** | 7.3 | **30** | 7.3 | **30** | 7.3 | **30** | 7.3 | **30** | 7.3 | **30** | 7.3 | **30** | 7.3 | **30** | 7.3 | **30** | 7.3 | **25** | 7.3 | **30** |
| dist | | 90 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| | | ***3000*** | 7.8 | **35** | 7.8 | **35** | 7.8 | **35** | 7.8 | **35** | 7.8 | **35** | 7.8 | **35** | 7.8 | **35** | 7.8 | **35** | 7.8 | **45** | 7.8 | **35** |
| dist | | 90 | | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| | | ***6000*** | 8.0 | | 8.0 | | 8.0 | | 8.0 | | 8.0 | | 8.0 | | 8.0 | | 8.0 | | 8.0 | | 8.0 | |
| dist | | 90 | **used for inventory projection only at present** | | | | | | | | | | | | | | | | | | | |
| age | | 5 | | | | | | | | | | | | | | | | | | | | |
| Total | | | 8 | **100** | 7.6 | **100** | 7.6 | **100** | 7.7 | **100** | 7.7 | **100** | 7.7 | **100** | 7.7 | **100** | 7.7 | **100** | 7.9 | **100** | 7.7 | **100** |

dist = survival planted/distribution natural; lag = regen lag; age = age range natural. Natural regen in planted stands = 100% fir in xm1/xm2/dm; hemlock in rest (Hw site index 3 m lower than planted fir)
a negative lag implies natural regeneration established before planting 100% natural regeneration stands assume 100% fir.
mai = mean annual increment Site Index 27 (30 cm stump, 10 cm top no OAF reductions) for demo purposes only
area = % area in biogeoclimatic variant
*Fir-type: Douglas-fir, yellow cypress, lodgepole pine

Tables 6-5a and 6-5b give an illustration of the change in regeneration models with changes in silvicultural system and Stewardship Zone for hemlock and fir types. The current regeneration allocation pattern described in Table 6-5a shows little impact on biological yields for hemlock across the three silvicultural class/Stewardship Zones. There is a small decrease in yields for fir types as natural regeneration is emphasized in the Habitat and Old-Growth Zones for this site index. However, this is mostly explained by a modelling simplification: there being no higher yielding hemlock assumed in the pure natural fir regeneration (yield tables f4, f5 and f6, Table 6-2). Table 6-5b shows that this difference lessens if some of the natural regeneration (under pure natural regeneration conditions) are hemlock.

**TABLE 6-5a. Changes in regeneration model with silvicultural system type and Stewardship Zone in the CWHvm1 biogeoclimatic variant for the hemlock type.**

| Regeneration Model see Table 6-2 | Timber/Habitat Dispersed/ aggregated | Timber/Habitat Group Selection /Shelterwood | Old-Growth Group Selection /Shelterwood |
|---|---|---|---|
| (**h3**) 900 plant–3000 natural | 35% | 20% | 20% |
| (**h4**) 800 plant–12000 natural | 45% | 35% | |
| (**h5**) 600 natural | | | 5% |
| (**h6**) 1500 natural | | 5% | 10% |
| (**h7**) 6000 natural | 5% | 10%* | 25%* |
| (**h8**) 12000 natural | 15% | 30%* | 40%* |
| *mai for Site Index 27* | *11.2* | *11.2 (11.4)#* | *11.1 (11.3)#* |
| % planted | 80% | 55% | 20% |
| % area >12000 sph | 60% | 65% | 40% |
| mean number naturals | 8550 | 9075 | 7080 |
| % area <1500 naturals | 0% | 5% | 15% |

*portions of these regeneration models are assumed pre-commercially thinned (pct); # = not pct'd
See Tables 6-4a, 6-4b and 6-4c for more detail.

**TABLE 6-5b. Changes in regeneration model with silvicultural system and Stewardship Zone in the CWHxm2 biogeoclimatic variant for the fir type.**

| Regeneration Model see Table 6-2 | Mai(1) | Mai(2) | Timber/Habitat Dispersed/ Aggregated | Timber/Habitat Group Selection /Shelterwood | Old-growth Group Selection /Shelterwood |
|---|---|---|---|---|---|
| **(f1)** 1200 plant–500 natural | 8.3 | 8.3 | 100% | | 0% |
| **(f2)** 1200 plant–1200 natural | 8.0 | 8.0 | | 80% | 30% |
| **(f4)** 600 natural | 5.4 | 6.4 | | | 5% |
| **(f5)** 1500 natural | 7.3 | 7.6 | | 10% | 30% |
| **(f6)** 3000 natural | 7.8 | 8.2 | | 10% | 35% |
| *mai for Site Index 27* | | | *8.3 (8.3)** | *7.9 (8.0)** | *7.6 (7.9)** |
| mean number naturals | | | 500 | 1410 | 1890 |
| % planted | | | 100% | 80% | 30% |

See Tables 6-4g, 6-4h and 6-4I for more detail. mai (1) in Table 6-4g, 6-4h, and 6-4i. Mai (2) are mais assuming one-third of natural regen for f4, f5, and f6 is hemlock, but growing at a 3 m lower site index.
*Brackets are assuming mai (2) numbers. All mais Site Index 27 fir.

Higher stocking levels for hemlock types are represented by the initial stocking density of 12,000 sph.

Recent analyses of MB's permanent plot data shows that precommercial thinning of Douglas-fir and western hemlock as practised operationally, generally decreases stand volumes without improvement in stand values. Some simulations work (e.g., the work of the Stand Density Management Working Group) shows small volume gains in some situations, generally at ages beyond culmination of mean annual increment. The issue of stocking levels and the costs and benefits of precommercial thinning will be addressed in the parallel analysis of silvicultural strategies for TFL 39 (refer to Section 2.5).

For this analysis, precommercial thinning is simulated to occur exclusively in the Habitat and Old-Growth Zones, representing the expected emphasis on wildlife habitat and old-growth attributes that might be achieved through lower stocking. Precommercial thinning reduces yields (see Figure 6-2 for an example). In addition, in the Old-Growth Zone a portion of the landbase is simulated to regenerate at low stocking—600 stems per hectare (on sites where this is encouraged through management intervention or on areas where there is no brush control and little site preparation). These low densities occur on only a very small portion of the landbase (5% within the Old-Growth Zone itself and less than 0.1% of the net timber harvesting landbase) and are expressly for non-timber reasons.

### *6.2.3 Species Succession*

For areas where there is no species information (areas awaiting restocking) and where deciduous species are to be converted to conifer Table 6-6 lists the assumed proportional species allocation.

**TABLE 6-6. Species Allocation: Non-stocked and Successional Changes**

| | Species Percent | | | | | |
|---|---|---|---|---|---|---|
| Biogeoclimatic Variant | Fd | Hw | Cw | Ba | Cy | Ss |
| CWHxm1 | 100 | | | | | |
| CWHxm2 | 77 | 23 | | | | |
| CWHdm | 68 | 31 | 1 | | | |
| CWHvm1 | | 75 | 18 | 7 | | |
| CWHvm2 | | 50 | 21 | 29 | | |
| CWHmm1 | 17 | 68 | 15 | | | |
| CWHmm2 | | 59 | | 41 | | |
| MH | | 36 | | 57 | 7 | |
| CWHwh1 | | 68 | 4 | | | 28 |
| CWHwh2 | | 100 | | | | |
| CWHvh2 | | 39 | 40 | | 1 | 20 |

## 6.3 Yield Adjustments

### *6.3.1 Utilization Levels*

Mature: all trees 50% sound and greater, MB Loss Factors

- Minimum dbh: 22.5 cm
- Stump height: 30 cm

- Top dib: 15 cm

Second Growth: all live trees

- Minimum dbh: 12.5 cm
- Stump height: 30 cm
- Top dib: 10 cm

### *6.3.2 Regeneration Delays*

A one-year regeneration delay is assumed in all Stewardship Zones.

### *6.3.3 Growth Impacts of Brush Competition*

Growth impacts of brush are handled implicitly in the regeneration models in terms of likely survival rates (of planted trees) and percent distribution of naturals. The increased emphasis on planting, fertilization at time of planting and brush control has led to a general reduction on the impacts of brush. The yield model allocation is an average yield response assuming some brush competition on some sites and none on others. For instance, the fir yield curves (Table 6-2) never exceed survey 90% natural regeneration distribution (90% of 2.4 m radius plots are stocked) and are only 60%-70% distributed at lower densities. Similarly the hemlock curves only assume a 100% distribution when stocking exceeds 6000 stems per hectare and are assumed to be 50%–75% distributed at lower densities. Yield tables h2 and h3 (Table 6.2) natural regeneration is only 75% and 80% distributed, respectively. These numbers reflect brush/patchy regeneration patterns.

### *6.3.4 Tree Improvement*

The table below shows the volume gain assumed attributable to genetically improved-planted stock. The factors are applied to planted yield tables only (f1a, flb, f2a, f2b, f3a, f3b and h1, h2, h3 and h4, Table 6-2). The unadjusted numbers are reduced by 10% to account for planting in areas where dense natural regeneration will form a portion of the final crop and species other than fir and hemlock are planted.

In collaboration with Timberwest and Canfor, MB has a secure supply of second generation seed.

| **Volume gain attributable to genetic improvement of planted stock** | | | | |
|---|---|---|---|---|
| **Planting Year** | **Fir unadjusted** | **Hemlock unadjusted** | **Fir-adjusted** | **Hemlock-adjusted** |
| 1995–2005 | 3% | 1% | 2.7% | 0.9% |
| 2006+ | 16% | 8% | 14.4% | 7.2% |

Note: adjusted numbers will be applied to all planted yield models in the timber supply analysis.

### *6.3.5 Non-recoverable Losses*

Loss of timber to fire has been small. Records for the last 25 years indicate that losses of standing mature timber (unsalvaged) and of growth in second growth have averaged about 8 000 $m^3$/year.

Timber losses (unsalvaged) to epidemic outbreaks of disease and insects have been minor. Salvage operations in recent years have included Douglas-fir bark beetle mortality in Block 1 and some high risk areas in a conifer sawfly infestation in Block 5. Monitoring of these situations and recent conifer sawfly infestations in Block 2 and black-headed budworm populations in Block 6 continues.

MB is committed to salvaging wind damage in the timber harvesting landbase. Discussions with operational engineers indicate that average unsalvaged losses from patch windthrow have varied across operations in TFL 39 between less than 0.5% and 1% of the AAC.

In this analysis an allowance of 1% of the harvest volume is made for non-recoverable losses.

### *6.3.6 Operational Adjustment Factors*

Adjustments are based on the previous approved TFL 39 MP # 7 numbers:

- Non-productive areas
  - Blocks 1 and 5: 6%
  - Rest: 4%
- Insects and disease
  - 2%
- Decay, waste and breakage
  - Fir types: 5%
  - Hemlock types: 6.5%

## 6.4 Application of Yield Projection to the Inventory

### *6.4.1 Mature*

The mature inventory is assumed static as in previous timber supply analyses and is supported by twenty-year analysis of MB's old-growth plots (Twenty-year re-measurement of old-growth permanent plots, N.J. Smith, 5-28-97 MB Report available on request).

### *6.4.2 Cruised Second Growth*

MB re-inventories second growth when it reaches pole size—generally when it exceeds 31 years. The resulting stocking information (basal area or volume estimates) is used to assign yield tables to these stands. Yield tables h5, h6, h7a and h8a for hemlock and f4, f5, f6 and f7 for fir are used (Table 6.2). The closest curve is followed. Consistent with previous analyses the calculated site index and volume, where available, or basal area (for younger cruised stands) will be used to attach the closest curve for a given age.

### *6.4.3 Uncruised Second Growth and All Future Stands*

The regeneration models are applied as in Section 6.2.

## 6.5 Site Index and Early Height Growth

### *6.5.1 Site Index Assignment*

MB's biophysical decision tree approach will be used for the analysis—this is the same model used for TFL 39 MP #7 (1994) in an option and as the base case in TFL 44 MP #4 (1997).

The biophysical model uses species, biogeoclimatic variant and geographic location (latitude, longitude as well as operating area) to assign site index based on the leading species for each stand. This model form is the most appropriate one—consistent with available biophysical attributes for the landbase. Note that the biophysical model uses Barker and Goudie's (1987) model for Sitka spruce rather than Nigh's (1996)—the differences are minor at younger ages (less than 80 years, bh) where the site index estimates are made.

**TABLE 6-7. Comparison of Biophysical and Recent Cruise Stand Site Index Estimates**

| ***Block*** | **Cruise** | **Biophysical** | **Area** |
|---|---|---|---|
| *1* | 30.1 | 30.0 | 20 030 |
| *2* | 30.0 | 28.9 | 4 727 |
| *3* | 29.0 | 30.1 | 889 |
| *4* | 30.0 | 30.8 | 1 386 |
| *6* | 27.9 | 31.4 | 2 709 |
| *ALL* | 29.8 | 30.0 | 29 741 |

A comparison was performed on recent second-growth cruise (1992+) and biophysical estimates (Table 6-7) that confirms previous findings of a reasonable agreement between the biophysical model and second-growth cruised data. Most of this cruising was done in Block 1.

Table 6-8 shows a comparison of the biophysical site index estimates by Block compared to inventory site index.

**TABLE 6-8. Biophysical Site Index compared to Inventory Site Index—Productive Landbase**

| Block | *1* | *2* | *3* | *4* | *5* | *6* | *7* | *Total* |
|---|---|---|---|---|---|---|---|---|
| Biophysical | 29 | 27 | 28 | 28 | 28 | 26 | 22 | 27 |
| Inventory | 26 | 23 | 24 | 24 | 22 | 21 | 19 | 22 |

### *6.5.2 Early Height Growth of Western Hemlock*

The early height growth of western hemlock is underestimated—an adjustment was previously approved for use in TFL 44, MP #3. Table 6-9 shows the magnitude of the impact.

**TABLE 6-9. Years to Reach 3 m, 5 m and 7 m using Wiley's and MB Hemlock Height Model**

| Height: | 3 m | | 5 m | | 7 m | |
|---|---|---|---|---|---|---|
| Site Index | *Wiley* | *MB* | *Wiley* | *MB* | *Wiley* | *MB* |
| **21** | 12 | 10 | 16 | 14 | 21 | 19 |
| **27** | 10 | 9 | 14 | 13 | 17 | 16 |
| **39** | 7 | 6 | 9 | 8 | 11 | 10 |

The "MB" adjustment for early height growth in western hemlock and tree improvement gains (Section 6.3.4) are the basis for reducing the time to achieve visually effective greenup in visual landscapes by one year (Section 8.3.2).

## 6.6 MoF Adjustments to Yield

### *6.6.1 Uncruised Stand/Regeneration Model Adjustment*

The procedure used in TFL 44, MP #3 (1997) will be used to determine additional yield adjustments for uncruised second-growth stands established before 1962 (before MB's Intensive Forestry Program was initiated). This will involve comparing the average yield projected for the cruised stands (established prior to 1962) with that for the regeneration models assigned to the older cruised stands. This approach will be applied separately to stands in the Douglas-fir and western hemlock species associations.

### *6.6.2 Further Yield Adjustments at Older Ages*

For pure fir sites (for this analysis regeneration models for fir in the CWHxm1, CWHxm2 and CWHdm only), the yields have previously been reduced 10% to be more consistent with WinTipsy yield estimates. Yields were further reduced at older ages in TFL 44 MP #3. Current Xeno yield curves are lower than those presented in TFL 39 MP #7. Table 6–10 shows the magnitude ranging from a 2%-17% yield decrease for a planted example to 9%-14% for a natural example.

**TABLE 6–10. Comparison of XENO Douglas-fir MAI estimates: MP #7 and MP #8**

| Estimate Version | Model Type | Site Index 21 | Site Index 27 | Site Index 36 |
|---|---|---|---|---|
| TFL 39 MP #7 | planted | 4.7 | 9.2 | 23.8 |
| Current | planted | 3.9 | 8.6 | 23.2 |
| % decrease | | ***17%*** | ***7%*** | ***2%*** |
| TFL 39 MP #7 | natural | 4.9 | 9.5 | 18.6 |
| Current | natural | 4.2 | 8.6 | 17.0 |
| % decrease | | ***14%*** | ***9%*** | ***9%*** |

planted: 1,200 fir planted, 85% survival, 300 natural, 50% distribution, -2 year lag, 4 year regeneration (f33a5 in TFL 39 MP #7)
natural: 3,000 stems per ha, 100% distribution, 4 year regeneration (f33n3 in TFL MP #8)
note: all volumes 17.5 cm dbh+, 30 cm stump, 10 cm top.

The Xeno yield curves, based on visual inspection, are on average very similar to the WinTipsy yield curves (before OAF reductions) even at older ages, thus no further adjustment is warranted.

## 6.7 Effects of Forest Project on Yields

The total yield consequence of the Forest Project are two-fold: 1) area/volume reduction for the leave trees, and 2) effects of leave trees on growth of the trees growing in the remaining area. *This section deals only with the second component*—the area/volume reductions are discussed in Section 8.5.

The yield tables in Attachment 1 are clearcut yields. The increased edge and leave tree amount is thought to negatively impact growth—though direct experimental evidence has yet to confirm the amount. The yield adjustments in Table 6-11 are applied directly to the yield tables as a proportional yield adjustment for each zone, i.e., dispersed retention in the Habitat Zone has a consequent proportional yield reduction of 11%, i.e., a 600 $m^3$/ha stand would become 534 $m^3$/ha. A Shelterwood treatment in the Habitat Zone would also be reduced by 11%.

**TABLE 6-11. Framework for Applying Variable Retention Yield Adjustment Factors**

| STEWARD SHIP | SILVICULTURAL | | | % zone area | system % yield factor | type % yield factor |
|---|---|---|---|---|---|---|
| Zone | System | Type[2] | Description | | | |
| TIMBER | Retention | Disp/Aggreg | aggregated – 10% left | 80 | 0 | 1 |
| | | | dispersed – 5% left | 10 | 5 | |
| | Shelterwood | Shelter/Group | dispersed – 10% left | 10 | 10 | 10 |
| | | | ZONE TOTAL | 100 | | 2 |
| HABITAT | Retention | Disp/Aggreg | aggregated – 15% left | 40 | 5 | 7 |
| | | | dispersed – 15% left | 10 | 15 | |
| | Shelterwood | Shelter/Group | 15% left | 25 | 15 | 14 |
| | Irregular SW[1] | | 15% left | 13 | 15 | |
| | Group Selection | | less than 1 ha patch | 12 | 10 | |
| | | | ZONE TOTAL | 100 | | 11 |
| OLD GROWTH[3] | Irregular SW[1] | Shelter/Group | 2/3rd left | 30 | 66 | 30 |
| | Group Selection | | 0.25 – 0.5 ha patches | 70 | 15 | |
| | | | ZONE TOTAL | 100 | | 30 |

[1]SW shelterwood
[2]Dispersed/Aggregated or Shelterwood/Group selection (see Table 6-3)
[3]Portions of second growth in the Old Growth Zone will be thinned to reduce stand density prior to harvesting. (50% of the volume assumed removed and the final yields will be reduced 25%–applied to yield table as factor)

Further discussion concerning these factors is available in *Effects of Alternative Silviculture on Yield: Coastal BC Forests*. N.J. Smith 1999 (MB report).

No allowance is made for leaving lower volume portions of stands for wildlife or old-growth attributes in some cutblocks (the consequence of which is a marginal increase in yield and a decrease in yield suppression effects).

## 6.8 Example Yield Adjustments—no Genetics

A hemlock stand, Site Index 27 growing in the CWHvm1, Habitat Zone, under aggregated retention at Age 70 years. Forty-five percent of this type will be grown using yield curve h4 (800 planted, 12000 naturals). At Age 70, yields are

743 $m^3$/ha (Attachment 1). Table 6-12 is an example of the effects of the various operational and growth adjustments. Changes in yield table allocation scenarios (Tables 6-4a to 6-4i) also attempt to account for yield consequences. For example, in the Habitat and Old-Growth Zones portions of the landbase regenerate at lower densities; the lower yields being an implicit consequence of lower management intensity in some areas thus serving as a further yield reduction 'factor'.

**TABLE 6-12. Example of Applying Yield Adjustments**
(Initial Yield Table Value of 743 $m^3$/ha)

| Category | Factor | Multiply by | Example $m^3$/ha | Cumulative reduction | Reference |
|---|---|---|---|---|---|
| Decay, waste, breakage | 6.5% | 0.935 | *695* | 6.5% | Section 6.3.6 |
| Disease/insects | 2% | 0.94 | *653* | 12.1% | Section 6.3.6 |
| Non-productive | 4% | | | | |
| Yield reduction affect of leave trees on next crop | 11% | 0.89 | *581* | 21.8% | Table 6-10 |

## 6.9 Intensive Forest Management Scenarios

The yield tables capture the consequences of current and proposed future management practices on yield. Additional consequences of differing levels of pre-commercial thinning, commercial thinning and fertilization will be examined under a separate Type II Analysis.

# 7.0 HARVESTING ASSUMPTIONS

## 7.1 Analysis Period

The analyses project timber supply in five-year periods from 2001–2005 until 2196–2200. The 1996 to 2000 harvest (actual for 1996 to 1998 and estimated for 1999 and 2000) is modelled to update the inventory from the end of 1995, to the beginning of the first period (2000–2005).

## 7.2 Harvest Flow Constraints

Where consistent with integrated resource management requirements, harvest levels for Blocks 1, 2, 3+4 and 6 will be constrained to ensure that harvest reductions of more than 10% per decade are avoided unless such reductions are necessitated by timberland reallocation to higher land use. In Blocks 5 and 7 (which do not directly support communities), the transition to LRSY may require harvest reductions in excess of 10% per decade.

## 7.3 Minimum Merchantability Standards

In the TSA, second growth (new forest) is not considered for harvest until it has attained minimum merchantability standards (maturity).

### *7.3.1 Second-growth Harvest Strategy*

The Protected Area Strategy and the Forest Practices Code have significantly reduced planning flexibility and harvest opportunities in mature timber. The timber harvesting landbase has been reduced substantially and spatial harvesting constraints, quite different from historical harvesting patterns, have been imposed.

Spatial constraints (including maximum block size, adjacency and rate-of-cut restrictions) mean that areas of similar aged second growth will not be harvested over a short period as they were in the previous harvest. Instead they will be harvested over a number of passes, often four or more over a period of 30 or more years.

The strategy then, in the timber zone, is to plan for first pass harvest opportunities in second growth at earlier ages than previously considered. It is proposed that initially, "minimum harvest ages" based on calculations of financial rotations in recent stand level analyses be used. These first pass "minimum harvest ages" will vary between 35 and 70 years depending on site productivity and species. Later harvest passes in similar aged timber will by definition occur at older ages.

This approach takes advantage of the considerable variability in stand conditions in many places and assists in the transition to the desired forest spatial pattern while helping to reduce impacts (of this transition) on timber supply in the medium-term.

The "minimum harvest ages" will assist in providing an initial focus for harvest planning. Collection of more detailed information from inventories and site visits will then indicate priority areas for harvest (e.g., forest health) and areas that must be deferred because of non-timber resource issues or because of harvest economics.

The variation in species, site productivity, terrain, stewardship zones, silvicultural systems and management concerns such as visual landscapes will result in a wide range of stand types and rotation ages across the forest.

### *7.3.2 Minimum Harvest Age Assumptions*

Minimum harvest ages will be defined in the analysis as follows:

- A minimum volume of 350 $m^3$/ha.
- A minimum age of 35 years.
- An age of 200 (if the volume is below 350 $m^3$/ha at age 200).

Second-growth harvest operations, primarily on Southern Vancouver Island and a recent analysis of second-growth harvest opportunities on private land both show that harvesting of stands with volumes of 350 $m^3$/ha plus to be generally economic.

Note that in the TSA, areas are often harvested well beyond their merchantability ages, depending on the availability of "merchantable" timber and cover class constraints. Further, a maximum volume objective will be applied to the linear programming approach used in the MP #8 analysis. Subject to harvest flow constraints, this will tend to increase harvest ages on medium and high sites,

towards culmination of mai. Average harvest ages and volumes per hectare will be reported for Option 1.

## 7.4 Initial Harvest Levels

The strategy as outlined in earlier management plans is to gradually adjust harvest levels towards our best estimate of LRSY for the forest.

There have been substantial changes in landbase and management assumptions since MP #7. The timber harvesting landbase has been reduced because of additional allowances, particularly for riparian areas, recreation and WTPs. Further the Forest Project provides for additional old-growth areas and stand level retention.

Initial harvest levels will be determined by trial and will depend on the interaction of the changes in assumptions (since MP #7) and harvest flow constraints (Section 7.2). It is expected that initial harvest levels will be lower than the AAC allocations for Blocks 2 to 7 (refer to Table 7-1). The earlier harvest history and large merchantable second-growth resource may allow an increase in the Block 1 harvest.

**TABLE 7-1.** ***MP #7 AAC Allocation by Working Circle*** **(000 $m^3$/year)**

| Working Circle | MP #7 AAC Allocation |
|---|---|
| Block 1 | 445 |
| Block 2 | 1 335 |
| Blocks 3+4 | 415 |
| Block 5 | 100 |
| Block 6 | 1 210 |
| Block 7 | 195 |
| Deciduous | 40 |
| **Total** | **3 740** |

# 8.0 INTEGRATED RESOURCE MANAGEMENT

This TSA explicitly recognizes a wide range of sensitive sites and non-timber resource concerns.

This section describes the status of non-timber resource inventories, and the approaches taken to consider these values in the TSA, reductions to the timber harvesting landbase and the application of cover class (rate-of-harvest) constraints.

## 8.1 Status of Non-Timber Resource Inventories

Non-timber resource mapping and netdown procedures have been developed in conjunction with personnel from the MoF and MoE.

Tables in this section shows that significant portions of TFL 39 have been mapped as important for riparian, wildlife, recreation, and visual landscape values and as unstable sites.

Management implications of these sensitive sites and non-timber resource concerns are modelled in the TSA as either a reduction in the timber management working landbase or as a cover class constraint. Sections 8.11 to 8.15 provide details on netdown procedures for sensitive soils, riparian areas, recreation, wildlife and cultural heritage resources. Area reductions are summarized in Section 8.2 and cover class constraints for visual landscapes, avalanche zones and community watersheds are described in Section 8.3. Biodiversity (stand level and landscape level) assumptions are described in Section 8.4 and Section 8.5 summarizes area assumptions for the Forest Project.

### *8.1.1 Sensitive Soils*

Mapping for sensitive soils has varied across the blocks in TFL 39. Refer to the correspondence copied in Attachment 2 for inventory details and for the general agreement on application of the inventories in the analysis.

There are two variations from the letters in Attachment 2. It was not possible to include the more recent five-class mapping in the Tsitika Watershed of Block 2. The earlier six-class mapping is used instead. The netdown for class IV soils in Block 7 has been applied as 20% instead of the <=20% described in the letter.

The resulting netdowns for Block 7 are high compared to the other blocks. Refer to Table 8.2. The Block 7 mapping and netdown factors have been reviewed by MB and MoF soils specialists. It is expected that a verbal agreement to reduce the Class V netdown to 80% and the Class IV netdown to 5% will be confirmed by writing in early November. The revised netdowns will be applied in the analysis.

Table 8-1 summarizes the netdowns.

**TABLE 8-1. Summary of Netdowns for Terrain Stability Units**

| | % Netdowns | | | | |
|---|---|---|---|---|---|
| **Block** | **Class IV** | **Class V** | **Class VI** | **Es2** | **Es1** |
| 1. | NA[(1)] | NA | NA | 20 | 90 |
| 2. | 20 | 90 | 100 | 15 | 85 |
| 3. | NA | NA | NA | 15 | 85 |
| 4. | NA | NA | NA | 15 | 85 |
| 5. | NA | NA | NA | 20 | 90 |
| 6. | 20 | 90 | 100 | NA | NA |
| 7. | 20 | 90 | NA | NA | NA |

(1) NA – Not Applicable

**TABLE 8-2. Percentage of Physically Operable Productive Area Unavailable Because of Terrain Stability**

| Block | Percent |
|---|---|
| 1 | 4.4% |
| 2 | 5.5% |
| 3 | 1.1% |
| 4 | 4.6% |
| 5 | 7.0% |
| 6 | 11.6% |

| | |
|---|---|
| 7 | 21.7% |
| **TFL 39** | **8.2%** |

### *8.1.2 Riparian Areas*

Information within MacMillan Bloedel's GIS database has been used to approximate the netdowns for riparian areas described in the Riparian Management Area Guidebook (December 1995).

The database includes streams, lakes and wetlands mapped to a 1:20 000 scale. It also includes information on hydrologic stream order, fish streams and community watersheds.

Applications is as follows:

**Spatial Information**

**Streams**

The Guidebook variables for determining the riparian buffer width and reserve percentage include stream width and the occurrence of fish or community watersheds.

Since stream width information is currently not available, hydrologic stream order has been used to approximate stream width. Refer to Table 8-3.

Inventory information on the presence or absence of fish has been used where available. Elsewhere, stream gradients (as measured on the TRIM 1:20 000 mapbase) of less than 20% have been used as the basis for classifying streams as fish bearing. Adjustments were made to correct for alternating small sections of fish and non-fish because of gradient changes. All resulting non-fish sections less than 150 meters in length that had fish bearing water upstream and downstream were changed to fish bearing. Subsequent to these changes, upstream portions (including tributaries) of "non-fish" streams were also coded as non-fish.

The derived coverage of stream class was reviewed by operations and changes were made accordingly.

The definition of community watersheds has been obtained from the MoELP web site.

**TABLE 8–3. Assignment of Stream Class**

| Stream Order | Implied Width (m) | Fish or Community Watershed | Default Stream (S) – Class |
|---|---|---|---|
| 1 | <=3.0 | No | S6 |
| 2 plus | >3.0 | No | S5 |
| 1 | <1.5 | Yes | S4 |
| 2 | 1.5 – 5.0 | Yes | S3 |
| 3 or 4 | 5.0 – 20.0 | Yes | S2 |
| 5 plus | >20.0 | Yes | S1 |

Buffers have been created adjacent to mapped streams and netdowns applied as described in Table 8-4.

**TABLE 8–4. Netdowns for Stream Riparian Areas**

| Stream[(1)] Class | Stream Order | Implied Width (m) | Reserve Zone (m) | Width (m) | % Netdown |
|---|---|---|---|---|---|
| S1 | S05 plus | >20 | 50 | 20 | 30 |
| S2 | S03, S04 | 5 - 20 | 30 | 20 | 30 |
| S3 | S02 | 1.5 - 5 | 20 | 20 | 30 |
| S4 | S01 | <1.5 | 0 | 30 | 15 |
| S5 | S02 plus | >3.0 | 0 | 30 | 15 |
| S6 | S01 | =3.0 | 0 | 20 | 3 |

(1) Stream classes 1 to 4 apply to fish streams and community watersheds.
(2) Management Zone % netdowns are 60% of the maximum values defined in the Guidebook.

### *Lakes and Wetlands*

Buffers have been created adjacent to mapped (at the1:20,000 scale) lakes and wetlands and netdowns applied as described in Table 8–5.

**TABLE 8–5. Netdowns for Lakes and Wetlands Riparian Areas**

| | | Size | Reserve Zone (m) (100% Netdown) | Management Zone | | |
|---|---|---|---|---|---|---|
| | | | | Width (m) All except Block 7 | Width (m) Block 7[(2)] | Netdown (%)[(1)] |
| Lakes | L1 large | > 1000 ha | 0 | 10 | 40 | 15 |
| | L1 | 5 – 1000 ha | 10 | 0 | 40 | |
| | L2 | 1 – 5 ha dry zone[(3)] | 10 | 20 | 20 | 15 |
| | L3 | 1 – 5 ha wet zone | 0 | 30 | 30 | 15 |
| | L4 | 0.5 – 1 ha dry zone | 0 | 30 | 30 | 15 |
| Wet-lands | W1 | > 5 ha | 10 | 40 | 40 | 15 |
| | W2 | 1 – 5 ha dry zone | 10 | 20 | 20 | 15 |
| | W3 | 1 – 5 ha wet zone | 0 | 30 | 30 | 15 |
| | W4 | 0.5 – 1 ha dry zone | 0 | 30 | 30 | 15 |

(1) Management Zone % net-downs are 60% of the maximum values defined in the Riparian Management Area Guidebook
(2) The Mid Coast District requirement for a 40 m management zone adjacent to all L1 lakes, has been applied.
(3) The “dry” zone includes the CDF, CWHds, CWHdm and CWHxm biogeoclimatic zones. Other zones in TFL 39 are in the “wet” zone.

### *Results*

**TABLE 8–6. Riparian (Streams, lakes and wetlands) Netdowns to the Productive Operable[(1)] Area (ha)**

| Block | Reserve Zones | Management Zones | Total | % of Productive Operable Area |
|---|---|---|---|---|
| 1 | 2 062 | 1 281 | 3 343 | 3.7% |
| 2 | 5 225 | 2 272 | 7 497 | 4.7% |
| 3 | 206 | 148 | 354 | 2.4% |
| 4 | 1 427 | 730 | 2 157 | 5.6% |
| 5 | 671 | 249 | 920 | 7.0% |
| 6 | 7 596 | 3 547 | 11 143 | 5.9% |
| 7 | 1 026 | 612 | 1 638 | 5.8% |
| **TOTAL** | **18 213** | **8 839** | **27 052** | **5.1%** |

[(1)]The productive forest has been reduced only by those areas that are not physically operable.

Management Zone netdowns are 60% of the maximum values defined in the Riparian Management Area Guidebook. The sensitivity of the netdown to varying the netdown percentage is shown in the next table.

**TABLE 8–7. Sensitivity of Management Zone Netdown to the Percentage Netdown**
(ha)

| Block | Analysis (60% of Max values) | Guidebook Max Values | Difference |
|---|---|---|---|
| 1 | 1 281 | 2 135 | 854 |
| 2 | 2 272 | 3 787 | 1 515 |
| 3 | 148 | 247 | 99 |
| 4 | 730 | 1 217 | 487 |
| 5 | 249 | 415 | 166 |
| 6 | 3 547 | 5 912 | 2 365 |
| 7 | 612 | 1020 | 408 |
| **TOTAL** | **8 839** | **14 733** | **5 894** |

**An Allowance for Streams not Mapped at the 1:20 000 Scale**

The streams that are not mapped at 1:20 000 are small and generally not expected to contain fish. Most will be stream Class 6 with a relatively small management reserve zone. A netdown of 1% of the net landbase (after considering mapped netdowns) is made as an additional allowance for these areas.

### *8.1.3 Recreation*

Inventories have been completed as described in the following table.

**TABLE 8–8. Summary of Recreation and Visual Landscape Inventories**

| Inventory | Standard | Completed | Reviewed |
|---|---|---|---|
| REC – Block 1 | MoF 1991 | March/95 | commissioned by MoF (SCFD) |
| REC – Block 2 | MoF Version 2.0 | Nov 9/98 | C. Cornfield, Nov 5/98 (CRFD) |
| REC – Block 3 | MoF Version 2.0 | Nov 9/98 | C. Brady, Nov 4/98 (PMFD) |
| REC – Block 4 | MoF Version 2.0 | Nov 9/98 | C. Brady, Nov 4/98 (PMFD) |
| REC – Block 5 | MoF Version 2.0 | Dec 5/98 | C. Cornfield, Jan 28/99 (CRFD) |
| REC – Block 6 | MoF Version 2.0 | Oct/97 | B. Eccles, Dec 1/97 (QCFD) |
| REC – Block 7 | MoF Version 2.0 | Jan 22/99 | D. Herchmer, Feb 11/99 (Region) |
| ROS – Block 1 | MoF 1991 | March/95 | commissioned by MoF (SCFD) |
| ROS – Block 2 | MoF Version 2.0 | Nov 9/98 | C. Cornfield, Nov 5/98 (CRFD) |
| ROS – Block 3 | MoF Version 2.0 | Nov 9/98 | C. Brady, Nov 4/98 (PMFD) |
| ROS – Block 4 | MoF Version 2.0 | Nov 9/98 | C. Brady. Nov 4/98 (PMFD) |
| ROS – Block 5 | MoF Version 2.0 | Dec 5/98 | C. Cornfield, Jan 28/99 (CRFD) |
| ROS – Block 6 | MoF Version 2.0 | Oct/97 | B. Eccles, Dec 1/97 (QCFD) |
| ROS – Block 7 | MoF Version 2.0 | Jan 22/99 | D. Herchmer, Feb 11/99 (Region) |
| VIS – Block 1 | MoF, 1990 | March/93 | B. Rebantad, early, 1993 (SCFD) |
| VIS – Block 2 | MoF, May/97 | Sept 1/98 | C. Cornfield, Aug 18/98 (CRFD) |
| VIS – Block 3 | MoF, May/97 | Sept 1/98 | C. Brady, Nov 4/98 (PMFD) |
| VIS – Block 4 | MoF, May/97 | Sept 1/98 | C. Brady, Nov 4/98 (PMFD) |
| VIS – Block 5 | MoF, May/97 | Dec 5/98 | C. Cornfield, Jan 28/99 (CRFD) |
| VIS – Block 6 | MoF, Version 2.0 | Oct/97 | B. Eccles, Dec 1/97 (QCFD) |
| VIS – Block 7 | MoF, May/97 | Jan 22/99 | K. Lee, Jan 25/99 (Region) |
| RAMS – Block 1 | Vancouver Forest Region Guidelines, received, Jan/99 | July/99 | Pending |
| RAMS – Block 2 | | June/99 | Pending |
| RAMS – Block 3 | | June/99 | Pending |

| | | | |
|---|---|---|---|
| RAMS – Block 4 | | June/99 | Pending |
| RAMS – Block 5 | | June/99 | Pending |
| RAMS – Block 6 | | April/99 | B. Eccles, April/99 (QCFD) |
| RAMS – Block 7 | | July/99 | Pending |

Table abbreviations:

- REC ..... recreation inventory
- ROS ..... recreation opportunity spectrum inventory
- VIS ..... visual landscape inventory
- RAMS..... recreation analysis report
- MoF..... Ministry of Forests
- SCFD ..... Sunshine Coast Forest District
- CRFD ..... Campbell River Forest District
- PMFD ..... Port McNeill Forest District
- QCFD ..... Queen Charlotte Forest District

Draft recreation analysis reports for Blocks 1 to 5 and 7 have been distributed for review. It is expected that the final reports will be sent out by October 1999.

Netdowns for recreation values are based on the recreation feature class in the recreation inventory.

| Recreation Feature Class | Netdown Factor | Comments |
|---|---|---|
| 0 | Er1—100% | |
| 1 | Er2—50% | |
| 1 | Karst—7% | Includes the recreation feature karst plateau (K03). Applied in Blocks 2 and 4. |

Extensive areas of karst occur in Blocks 2 and 4. Entrances for discovered caves are generally classified with a recreation feature Class “0”. The 7% allowance provides for additional discoveries and is based on data collected by the Campbell River District (MoF).

An adjustment has also been made in the analysis for Block 1 Er2 areas. The recreation inventory for Block 1 includes substantial areas classified as Er2, largely because of visual landscape values. These map polygons overlap areas classified with the partial retention Recommended Visual Quality Class (RVQC) in the visual landscape inventory. To avoid double counting of constraints for management of these visual landscapes, the Er2 constraint is ignored where the overlap occurs and only the partial retention constraint is applied. The area of overlap is approximately 12 000 ha of physically operable productive forest.

The netdowns are based on the report, “Procedures for Factoring Recreation Resources into Timber Supply Analysis”, Ministry of Forests, 1993. There is concern that the application of the Er2 factor of 50% may be more constraining than necessary. A large area (42 610 ha of physically operable productive forest) is classified with a recreation feature class 1 and hence is expressed as Er2 and netted-down at 50%.

Planning detail is generally not available to be more discerning on netdown factors. There are situations where a netdown need not be as high as 50%. For instance, stream corridor polygons may be rated “C1”, mainly for fishing. If a mapper tends to use physiographic breaks to define polygons, the boundaries will follow the edges of floodplains and polygon width may be quite high. Such

areas being netted-down at 50% may be much more than that required to protect the resource (fish) and the fishing experience or opportunity.

As a simple sensitivity, if the average net down for Er2 was halved to 25% then the physically operable productive forest affected would be reduced by 10 652 ha (refer to Table 8-9).

A project has been initiated to review the TFL 39 recreation netdowns for strategic analysis. Recreation inventory polygons that might warrant a lower netdown have been identified. These will be reviewed with MB Divisions and MoF District staff. The results of these discussions will be included in discussion of the landbase sensitivity analysis (Options 8 and 9).

### *8.1.4 Wildlife*

Deer and elk winter ranges in Blocks 2 and 4 are similar to those applied in MP #7. Minor changes have occurred after consultation with MoELP specialists. Two new deer winter ranges have been located in Block 1. Netdowns of 100% are applied to Ew1 areas and 50% for Ew2 areas.

Critical habitat areas for grizzly bear and goats in Blocks 1 and 5 have been reviewed and revised in conjunction with the MoELP District Forest Ecosystem Specialist. The resulting areas are described in Table 8-9. Netdowns of 90% are applied to Ew1 areas and 50% for Ew2 areas. These areas, particularly those for goats have increased significantly since MP #7. The netdowns will be reviewed and if significant the results will be discussed in the analysis report.

In Block 7, consultation with MoELP specialists has resulted in using the revised Terrestrial Ecosystem Mapping (TEM) for identifying attributes of critical grizzly bear habitat. The modelling approach developed by the MoELP (Victoria) is used to identify TEM polygons that include very high (Ew1) or high (Ew2) value habitat characteristics.

It was agreed to apply a netdown of 55% to the Block 7 grizzly bear Ew1 polygons, corresponding to the average proportion of these areas that has very high habitat values. For the Ew2 polygons a netdown of 25% is to be applied. This is half of the average proportion of these areas that has high habitat values.

### *8.1.5 Cultural Heritage Resources*

A revised Archaeological Overview Assessment (AOA), funded by the MoF, has been completed in the Block 6 portion of the Queen Charlotte Islands. During August to October 1999, MB funded the conversion of the data into an Arc Info format for the use in the MP #8 analysis. At the time of writing this report, the conversion was not complete and hence the results could not be included. The analysis will include an additional netdown allowance for CMTs in areas zoned in the AOA for high likelihood of CMTs.

The reports of CMT surveys during the last three years in Block 7 were examined. They show relatively little occurrence of CMTs in harvest planning areas during that period. Variable retention will provide the flexibility to place retention areas to protect such CMT sites.

Similarly for the more southern blocks of TFL 39, it is expected (and assumed in the analysis) that variable retention will provide adequate protection for CMTs.

## 8.2 Reductions to the Timber Harvesting Landbase for Sensitive Sites and Non-Timber Resource Values

These area reductions are made after deductions for non-forest, non-productive, low sites and physically inoperable areas. Table 8-9 shows the reduction in area and Table 8-10 the reduction in mature volume. Note that area reductions include mature, second growth and NSR, i.e., they do not directly relate to mature volumes.

The reduction factors have been applied to the total mapped area (after allowance for physically inoperable areas) to obtain the areas and volumes in the tables. For example the 7 766 ha of Er2 Areas in block 1 is multiplied by 0.5 to obtain the 3 883 ha in Table 8-9.

The totals in Tables 8-9 and 8-10 are simple additions across the categories in the tables. The item "Net" at the end of each table excludes any area overlap that may occur between resource values. These "Net" areas and volumes are included in Section 5.3.6 on "Determination of the Timber Harvesting Landbase."

**TABLE 8–9. Reductions to the Productive Operable Area for Sensitive Sites and Non-Timber Resources (ha)**

| | | Reduction Factor | Block 1 | Block 2 | Block 3 | Block 4 | Block 5 | Block 6 | Block 7 | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| | Avalanche (Ea1) | 0.2 | **179** | **105** | | **46** | **39** | | **89** | **458** |
| Soils | Soils (Es1 + Class V) | 0.85–1.0 | 2 237 | 6 597 | 80 | 1 185 | 601 | 19 262 | 4 292 | 34 254 |
| | (Es2 + Class IV) | 0.15–0.2 | 1 750 | 2 196 | 77 | 574 | 318 | 2 563 | 1 867 | 9 345 |
| | **TOTAL SOILS** | | **3 987** | **8 793** | **157** | **1 759** | **919** | **21 825** | **6 159** | **43 599** |
| Riparian | Stream Reserves | 1.0 | 1 798 | 4 984 | 190 | 1 346 | 662 | 7 183 | 906 | 17 069 |
| | Stream Management Zones | 0.03–0.3 | 1 180 | 2 106 | 136 | 666 | 241 | 3 307 | 519 | 8 155 |
| | Lakes and Wetlands Reserves | 1.0 | 263 | 241 | 16 | 81 | 9 | 411 | 120 | 1 141 |
| | Lakes & Wetlands Mgmt Zones | 0.15 | 110 | 166 | 12 | 64 | 8 | 237 | 93 | 690 |
| | **TOTAL RIPARIAN** | | **3 351** | **7 497** | **354** | **2 157** | **920** | **11 138** | **1 638** | **27 055** |
| Wildlife | Deer and Elk (Ew1) | 1.0 | 150 | 6 302 | | 386 | | | | 6 838 |
| | (Ew2) | 0.5 | 4 | 280 | | 19 | | | | 303 |
| | Grizzly Bear (Ew1) | 0.55–0.9 | 24 | | | | 869 | | 112 | 1 005 |
| | (Ew2) | 0.25–0.5 | 83 | | | | 173 | | 359 | 615 |
| | Goats (Ew1) | 1.0 | 3 832 | | | | 994 | | | 4 828 |
| | (Ew2) | 0.5 | 80 | | | | 41 | | | 121 |
| | **TOTAL WILDLIFE** | | **4 173** | **6 582** | | **405** | **2 079** | | **471** | **13 710** |
| Regen | Regeneration (Ep1) | 0.9 | 4 | | | 2 | | | | 6 |
| | (Tsitika) | 0.9 | | 1 882 | | | | | | 1 882 |
| | | | | | | | | | | |
| Recreation | Recreation (Er1) | 1.0 | 702 | 1 187 | 43 | 20 | 313 | 4 376 | 479 | 7 120 |
| | (Er2) | 0.5 | 3 883 | 4 018 | 796 | 843 | 362 | 10 380 | 1 023 | 21 305 |
| | (Kast) | 0.07 | | 636 | | 460 | | | | 1 096 |
| | **TOTAL RECREATION** | | **4 585** | **5 841** | **839** | **1 323** | **675** | **14 756** | **1 502** | **29 521** |
| | **TOTAL** | | **16 279** | **30 700** | **1 350** | **5 692** | **4 632** | **47 719** | **9 859** | **116 231** |
| | **NET** | | **14 622** | **26 607** | **1 289** | **5 151** | **3 437** | **43 117** | **8 631** | **102 854** |

## TABLE 8–10. Reductions to Operable Mature Volumes for Sensitive Sites and Timber Resources ($000^3$)(1)

| | | Reduction Factor | Block 1 | Block 2 | Block 3 | Block 4 | Block 5 | Block 6 | Block 7 | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| | Avalanche (Ea1) | 0.2 | 87 | 82 | | 27 | 28 | | 51 | 276 |
| Soils | Soils (Es1 + Class V) | 0.85–1.0 | 776 | 4 042 | 34 | 559 | 390 | 9 153 | 2 482 | 17 436 |
| | (Es2 + Class IV) | 0.15–0.2 | 445 | 1 236 | 20 | 264 | 189 | 1 117 | 1 019 | 4 290 |
| | **TOTAL SOILS** | | **1 221** | **5 278** | **56** | **823** | **579** | **10 270** | **3 501** | **21 726** |
| Riparian | Stream Reserves | 1.0 | 196 | 1 510 | 5 | 199 | 242 | 2 419 | 576 | 5 147 |
| | Stream Management Zones | 0.03–0.3 | 127 | 639 | 7 | 118 | 82 | 1 071 | 306 | 2 350 |
| | Lakes and Wetlands Reserves | 1.0 | 18 | 65 | 1 | 21 | 4 | 139 | 71 | 319 |
| | Lakes & Wetlands Mgmt Zones | 0.15 | 6 | 52 | 1 | 10 | 2 | 82 | 53 | 206 |
| | **TOTAL RIPARIAN** | | **347** | **2 266** | **14** | **348** | **330** | **3 711** | **1 006** | **8 022** |
| Wildlife | Deer and Elk (Ew1) | 1.0 | 52 | 4 358 | | 248 | | | | 4 658 |
| | (Ew2) | 0.5 | 1 | 189 | | 15 | | | | 205 |
| | Grizzly Bear (Ew1) | 0.55–0.9 | 17 | | | | 383 | | 67 | 467 |
| | (Ew2) | 0.25–0.5 | 57 | | | | 131 | | 240 | 428 |
| | Goats (Ew1) | 1.0 | 736 | | | | 688 | | | 1 424 |
| | (Ew2) | 0.5 | 28 | | | | 27 | | | 55 |
| | **TOTAL WILDLIFE** | | **891** | **4 547** | | **263** | **1 229** | | **307** | **7 237** |
| Regen | Regeneration (Ep1) | 0.9 | 2 | | | 3 | | | | 5 |
| | (Tsitika) | 0.9 | | 1 291 | | | | | | 1 291 |
| | | | | | | | | | | |
| Recreation | Recreation (Er1) | 1.0 | 371 | 525 | 2 | 7 | 98 | 1 974 | 318 | 3 295 |
| | (Er2) | 0.5 | 625 | 1 202 | 124 | 315 | 153 | 3 588 | 581 | 6 588 |
| | (Kast) | 0.07 | | 188 | | 49 | | | | 237 |
| | **TOTAL RECREATION** | | **996** | **1 915** | **126** | **371** | **251** | **5 562** | **899** | **10 120** |
| | **TOTAL** | | **3 544** | **15 380** | **194** | **1 835** | **2 417** | **19 543** | **5 764** | **48 677** |
| | **NET** | | **3 157** | **13 398** | **180** | **1 670** | **1 885** | **17 679** | **5 003** | **42 972** |

(1) Volumes are AAC Utilization (i.e., Close U less decay, cull, breakage and $W_2$)

## 8.3 Forest Cover Requirements

### *8.3.1 Adjacent Cutblocks and Greenup*

- After an area is harvested, adjacent areas cannot be harvested until a greenup status is achieved. An allowance is made for harvest scheduling impacts of this constraint by recognizing the average period to achieve greenup and the number of harvest passes required to harvest all areas once.
- The average period to achieve greenup is 10 years.
- It is estimated that four harvest passes would be required to harvest all areas once.
- Adjacency is modelled by allowing a maximum of 25% (four harvest passes) of the timber harvesting landbase, not included in more stringent cover class constraints (e.g., visual landscape), to be less than 10 years of age at any time.

### *8.3.2 Visual Landscape*

Visual Landscape Inventories have been completed during MP #7. Refer to Section 8.1.3 for a description of the inventories. In general the new inventories are more site specific than those used in MP #7. The result is a decrease in area in the Recommended Visual Quality Class (RVQC) partial retention. This changes is most noticeable in Block 6 (QCI) and least in Block 1 (Powell River).

In the TSA, forest cover constraints are applied separately to each RVQC within a working circle. The constraints limit the rate-of-harvest by defining the maximum area that may be below a certain height at any given time.

The two main variables used to define the constraints are the Visually Effective Greenup age (VEG) and the maximum allowable area below VEG.

VEG was defined for the base options of this TSA as the average age to reach a site height of 5 m (Blocks 1 to 5) or 6 m (Blocks 6 and 7). These average ages have been calculated by Block and RVQC zone, hence units with higher site indices, on average, have fewer years to achieve VEG.

Table 8-11 lists the average site heights and ages for VEG by Working Circle and RVQC. The average regeneration delay of one year, applied in most options, is assumed to be offset by gains from tree improvement. In addition, a recent review shows that hemlock site index curves understate early height development in that species (refer to Section 6.5).

**TABLE 8–11. Visually Effective Greenup (VEG) Heights and Ages**

| Block | VEG (site height in m) | Average Years to Meet VEG by RVQC | | |
|---|---|---|---|---|
| | | Retention | Partial retention | Modification |
| 1 | 5 | 15 | 15 | 15 |
| 2 | 5 | 18 | 14 | 15 |
| 3+4 | 5 | 13 | 14 | 15 |
| 5 | 5 | N/A | 15 | 17 |
| 6 | 6 | 17 | 16 | 16 |
| 7 | 6 | 21 | 21 | 23 |

The upper end of the range (of maximum allowable area below VEG) is modeled in the base option. This assumes effective implementation of visual landscape mitigation strategies. The maximums are 5% for retention areas, 15% for partial retention and 25% for modification. The percentages refer to the total forest area within the RVQC. Option 6 assumes the midpoint of the range for maximum allowable area below VEG; that is 3% for retention, 10% for partial retention and 20.5% for modification.

Table 8-12 summarizes the visual landscape constraints by working circle and RVQC, including forest area, timber harvesting landbase, years to VEG and the maximum allowable area under VEG.

**TABLE 8–12. Summary of Visual Landscape Constraints**

| Working Circle | RVQC | Forest Area (ha) | Timber Harvesting Landbase area (ha) | Years to VEG | Maximum Allowable Area Below VEG (%) |
|---|---|---|---|---|---|
| Block 1 | Retention | 481 | 184 | 15 | 5.0 |
| | Partial Retention | 47 571 | 25 818 | 15 | 15.0 |
| | Modification | 20 298 | 8 354 | 15 | 25.0 |
| Block 2 | Retention | 1 529 | 782 | 18 | 5.0 |
| | Partial Retention | 10 843 | 5 870 | 14 | 15.0 |
| | Modification | 15 315 | 9 804 | 15 | 25.0 |
| Blocks 3+4 | Retention | 93 | 18 | 13 | 5.0 |
| | Partial Retention | 6 251 | 4 187 | 14 | 15.0 |
| | Modification | 707 | 579 | 15 | 25.0 |
| Block 5 | Partial Retention | 1 768 | 675 | 15 | 15.0 |
| | Modification | 132 | 57 | 17 | 25.0 |
| Block 6 | Retention | 2 706 | 425 | 17 | 5.0 |
| | Partial Retention | 38 324 | 13 336 | 16 | 15.0 |
| | Modification | 29 631 | 19 162 | 16 | 25.0 |
| Blocks 7 | Retention | 320 | 60 | 21 | 5.0 |
| | Partial Retention | 3 669 | 1 305 | 21 | 15.0 |
| | Modification | 860 | 243 | 23 | 25.0 |
| Total TFL 39 | Retention | 5 129 | 1 469 | | 5.0 |
| | Partial Retention | 108 426 | 51 191 | | 15.0 |
| | Modification | 66 943 | 38 199 | | 25.0 |

### *8.3.3 Avalanche Areas*

Avalanche run-out zones have been mapped as Ea1 areas. In addition to the 20% reduction in area (Section 8.2), a cover class constraint is applied by Working Circle to the Ea1 areas remaining in the working forest.

The constraint allows no more than 20% of the forested area to be less than 30 years of age at any time.

**TABLE 8-13. Avalanche Cover Class Areas**

| Working Circle | Forest Area (ha) | Timber Harvesting Landbase (ha) |
|---|---|---|
| Block 1 | 5 138 | 527 |
| Block 2 | 638 | 273 |
| Blocks 3 + 4 | 1 130 | 144 |
| Block 5 | 561 | 83 |
| Block 6 | N/A | N/A |
| Block 7 | 506 | 178 |
| Total TFL 39 | 7 973 | 1 205 |

There is no Ea1 in Block 6.

The timber harvesting landbase for Ea1 Areas is relatively small because of substantial reductions for non-productive and inoperable areas and for sensitive soils and other ESAs (including the 20% applied specifically to Ea1 Areas).

### *8.3.4 Community Watersheds*

The MoELP's map of designated community watersheds has been included in the data set.

Table 8-14 lists the five community watersheds in TFL 39. The watersheds listed for Block 1 and Block 6 are each partially within the TFL. Newcastle Creek in Block 2 is almost wholly within the TFL.

A cover class constraint is applied to each community watershed. The constraint allows no more than 5% of the forested area to be less than 5 years of age at any one time.

**TABLE 8-14. Designated Community Watersheds in TFL 39**

| Block | Watershed Name | MoELP # | Forested Area within TFL 39 above POD (ha)[(1)] |
|---|---|---|---|
| 1 | Jefferd | 900.031 | 49 |
| | Lang | 900.034 | 1 734 |
| | Whittal | 900.069 | 715 |
| 2 | Newcastle_2 | 920.044 | 902 |
| 6 | Honna | GRA.001 | 2243 |

[(1)]Only part of the Jefferd, Lang and Whittal and Honna community watersheds are within TFL 39. POD refers to Point of Diversion.

### *8.3.5 Coastal Watershed Assessment Procedures (CWAPs)*

In most cases the results of CWAPs are applied to forest management practices over a short (5-10 year) timeframe. In some cases, results are applied over longer timeframes (e.g., 10 years) and are often related to the concept of the Equivalent Clearcut Area (ECA). ECA is a coarse indicator of possible stream flow changes in a watershed, based on a simple and largely unverified linear model relating tree height and "hydrologic recovery ".

In Blocks 1 to 4, CWAPs that have resulted in defined rate of harvest restrictions (ECA) are listed in Table 8–15. The professionals involved in this CWAP work

have converted the ECA recommendation into maximum annual harvest rates for use in this analysis. The harvest rate restrictions will be applied for the first 10 years of the analyses.

ECA restrictions have also been described for a number of watershed basins in Block 6. Generally, these basins are showing quick hydrologic recovery as stands resulting from earlier logging are reaching 10 m to 15 m and greater in height. Minimal impacts on harvest schedules are expected.

**TABLE 8–15. CWAP Rate of Harvest Restrictions Applied in the Analysis**

| Block | Watershed | Basin | Productive Forest (ha) | THLB (ha) | Maximum Cut (ha/year) |
|---|---|---|---|---|---|
| 1 | Whittal | Total basin | 676 | 575 | 10 |
| 1 | My | Total basin | 874 | 675 | 28 |
| 2 | Adam | Rooney Creek | 1 707 | 1 437 | 25 |
| 2 | Adam | Kim Creek | 2 328 | 1 848 | 34 |
| 2 | Elk | North A | 1 178 | 872 | 5 |
| 2 | Elk | South B | | | 5 |
| 2 | Tsitika | Akan Creek (8) | 5 173 | 4 033 | 190 |
| 2 | Tsitika | Russell Creek (9) | | | 46 |
| 2 | Tsitika | Muskeg (10) | | | 20 |
| 2 | Tsitika | Basin 11 | | | 4 |
| 4 | Benson | Craft (5) | 3 160 | 2 224 | 18 |
| 4 | Benson | Basin 7 | | | 49 |
| 4 | Waukwass | Basin 1 | 3 470 | 2 768 | 93 |
| 4 | Waukwaas | Basin 2 | | | 6 |

## 8.4 Biodiversity

### *8.4.1 Wildlife Tree Patches (WTPs)*

Table 20(a) of the Biodiversity Guidebook (September 1995) has been used to assign targets for WTPs by landscape unit and biogeoclimatic variant. Table 20(b) is currently been used to assign WTP targets operationally. It is, however, appropriate to use Table 20(a) for a long-term analysis as it is expected that landscape units will soon be formally designated and that landscape biodiversity objectives will be established during the next few years.

Netdowns for WTPs have been calculated by reducing the WTP targets by 75%. This follows assumptions used in recent Coastal timber supply analyses. The rationale is that 75% of the WTP requirements will be met by forest areas retained as sensitive sites (riparian and unstable soil areas), on inoperable slopes and for non-timber values (e.g., recreation and wildlife).

A Block area weighted average has been derived for use in the analysis. These are as follows:

Average WTP netdown (%) by Block

| Block | | | | | | |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3.0 | 2.4 | 3.6 | 3.1 | 2.0 | 2.0 | 1.0 |

An area reduction is used to model WTP reserves as generally they are 2 ha and larger and hence may contribute towards meeting old seral stage requirements at the landscape unit level.

### *8.4.2 Landscape Biodiversity*

The procedure to be applied in Option 1 (the base option) follows the methodology described in the note on "Incorporating Biodiversity and Landscape Units in the Timber Supply Review" in the "Tree farm Licence Management Plan Guidelines", MoF, August 1998.

Old seral constraints are applied as a cover class constraint to the forested areas for combinations of draft landscape units and biogeoclimatic variants within TFL 39. Some landscape units that have a very minor presence in the TFL (less than 200 ha of productive forest area) are not included as they will have minimal impact on the results.

The approach is to include all reserved old growth (as classified in MB's forest inventory) as contributing to the old seral targets. This includes non-productive forest, spatial net-downs in productive forest (for soils, riparian, wildlife and recreation, etc.) and factor net-downs for small stream riparian areas, wildlife tree patches, and additional old-growth reserves and variable retention (Forest Project). In the base option, areas that are currently second growth may contribute to old seral targets when they reach 250 years of age.

Note that the intention of the Forest Project (variable retention and old-growth zones) is to provide an alternative way to achieve landscape biodiversity objectives. Discussions between MB, MoF and MoELP staffs are continuing on this issue. As it has not yet been resolved, this analysis includes both an estimate of the impact of the Forest Project and the requirement for old seral targets.

For the base option, old seral targets are based on the weighted average of 10%, 45% and 45% for high, intermediate and low biodiversity emphases respectively. Since the low biodiversity emphasis allows for a transition to old seral targets over three rotations the target levels (Table 8–17) are also increased over a period of three rotations:

**TABLE 8–16. Minimum Old Seral Requirements from the Biodiversity Guidebook (%)**

| Natural Disturbance Type | Biogeoclimatic Zone | Biodiversity Emphasis | | |
|---|---|---|---|---|
| | | Low | Intermediate | High |
| NDT1 | CWH | 13 | 13 | 19 |
| NDT1 | MH | 19 | 19 | 28 |
| NDT2 | CWH + CDF | 9 | 9 | 13 |

**TABLE 8–17. Minimum Old Seral Requirements for the Base Option (%)**

| Natural Disturbance Type | Biogeoclimatic Zone | Year | | |
|---|---|---|---|---|
| | | 0 - 105 | 106 – 210 | 211 plus |
| NDT1 | CWH | 9.7 | 11.7 | 13.6 |
| NDT1 | MH | 14.2 | 17.1 | 19.9 |
| NDT2 | CWH + CDF | 6.7 | 8.1 | 9.4 |

Preliminary summaries indicate that reserve areas will be insufficient to meet the first period constraint in a number of landscape unit/variant combinations, mainly in Blocks 1 to 4 and particularly in lower elevation variants. A sensitivity analysis comparing harvest schedules with and without the old seral constraint will be run for selected blocks. Most of the constrained units have substantial areas reserved in second growth. In some cases there is insufficient remaining old-growth to provide the first target—hence recruitment will be from older second-growth reserve areas.

Option 4 will include early and mature plus old seral stage (as well as old seral) constraints to determine their impact on short and long term harvest levels. The draft biodiversity emphasis will be used to assign the constraints to each landscape unit and biogeoclimatic variant combination. The constraints are summarized as follows:

**TABLE 8–18. Early and mature plus Old Seral Requirements from the Biodiversity Guidebook (%)**

| Natural Disturbance Type | Biogeoclimatic Zone | Age Range for Constraint (years) | Biodiversity Emphasis | | |
|---|---|---|---|---|---|
| | | | Low | Intermediate | High |
| Early Seral Constraints (maximum %) | | | | | |
| NDT1 | CWH | <40 | NA | 30 | 23 |
| NDT1 | MH | <40 | NA | 22 | 17 |
| NDT2 | CWH + CDF | <40 | NA | 36 | 27 |
| Mature + Old Seral Constraints (minimum %) | | | | | |
| NDT1 | CWH | >80 | 18 | 36 | 54 |
| NDT1 | MH | >120 | 19 | 36 | 54 |
| NDT2 | CWH + CDF | >80 | 17 | 34 | 51 |

Option 5 will model the old seral constraints according to the draft biodiversity emphasis for each landscape unit instead of the weighted averages applied in Option 1. For example, Option 5 differs from Option 4 in that the early and mature plus old seral constraints are not included.

## 8.5 Forest Project: Stewardship Zones and Variable Retention

In June of 1998, MB announced a new forest management strategy (The Forest Project). Key components include phasing out clearcutting over a five-year period to be replaced by variable retention and an increase in conservation of old-growth forests and wildlife habitat on BC lands managed by the company.

Research carried out by MB indicates that this New Forest Management direction can be consistent with retaining social license to harvest in original forests, work safety, improved competitiveness and economic results. This strategy applies current ecological thinking to address mainstream public concerns on clearcutting coastal old-growth forests.

The initiative includes the classification of forestlands into three distinct stewardship zones (old-growth, habitat and timber) with decreasing levels of minimum retention (from old growth to timber) and a range of silvicultural systems from group selection to aggregated retention. The general management strategy for each silvicultural zone is as follows:

- **Old-Growth Zone:**
  The old-growth zone includes areas of high biodiversity and/or environmental sensitivity. High cultural and recreation values are also priority criteria. The primary management objective is the conservation of old-growth values. About two-thirds of the existing forest will be retained. Where it occurs, harvesting will include application of group selection and irregular shelterwood silviculture systems and uneven-aged management. Retention minimums are 20%.
- **Habitat Zone:**
  The habitat zone includes areas that have high biodiversity values and a moderate amount of old-growth. The primary objective is wildlife conservation. Silviculture systems utilized in this zone include various types of shelterwood, group selection and group retention and a mix of even and uneven-aged management. Retention minimums are 15%.
- **Timber Zone:**
  The timber zone includes both private and public land designated low in biodiversity. The primary management objective is timber management. Silvicultural systems used include group retention and various types of shelterwood with even-aged management. Retention minimums are 10% for group retention and 5% for dispersed retention.

A draft classification of stewardship zones will be applied in this analysis. It is recognized that changes may occur as a result of higher level plans, other regional planning initiatives and further discussion with MoF and MoELP staff.

The draft classification includes old-growth zones in:

- Block 2: Lower Tsitika Watershed
- Block 5: Phillips Lake/Estuary
- Block 6: Yakoun Lake Basin, Cumshewa Head area, West Coast of Moresby Island (Security Inlet and Boomchain Bay)
- Block 7: Koeye Watershed

Draft Habitat Zones are as follows:

- Block 1: Areas within the Powell Daniels, Brittain and Bunster Landscape Units.
- Block 2: Upper Tsitika Watershed, White Landscape Unit.
- Block 4: Upper portion of the Benson Watershed.
- Block 5: Total Block except for the old-growth zone area around Phillips Lake.

- Block 6: Lower Yakoun and Tlell Watersheds
- Block 7: Namu Lakes area.

All other areas are classified as in the timber zone.

Changes in the draft classification of stewardship zones have recently occurred (after this data set was derived) in Block 6 (QCI). The changes include a reduction in the size of the Cumshewa Head old-growth zone, the addition of the Yakoun River corridor old-growth zone and the re-typing of the lower Yakoun as timber rather than habitat.

The Forest Project (stewardship zones and variable retention) has area, yield and silvicultural effects that impact timber supply. The yield and silvicultural components impact long-term harvest levels. They are described in Section 6.

Area effects can have both short-term and longer-term impacts on timber supply. They result from increased reserves in old-growth zones and from the additional retention throughout the forest landscape.

Approximately two-thirds of the forest in old-growth zone will be retained. It is assumed that the incremental area impact of variable retention is half of the minimum retention level by stewardship zone. This assumes that existing reserves including WTPs contribute the rest of the required retention. The resulting incremental netdown has been applied according to stewardship zone:

- Timber Zone 5%
- Habitat Zone 7.5%
- Old-growth Zone 70% (66% retained plus 10% of the remaining 33% for variable retention).

This view of harvest patterns in old-growth zones results in a high estimate of netdowns to the timber harvesting landbase. It assumes that the one-third in which timber harvesting occurs, is geographically distinct from the reserved two-thirds and that it reflects netdowns that are average for the zone. This likely overstates the netdowns, particularly in the Tsitika old-growth zone which included the Protected Area in the Lower Tsitika.

If the other extreme view is taken; that harvest is distributed throughout the old-growth zone and that other netdowns contribute towards the two-thirds reserved then the total netdown for the forest project (old-growth zones and variable retention) is reduced by 6 700 ha and 3 800 000 $m^3$ of mature timber. This difference will be referred to and discussed in the sensitivity analysis.

Table 8–19 summarizes area and mature volume percentages by stewardship zone and block.

**TABLE 8–19. *Summary of Stewardship Zones by Block (percentages)***

| Areas | Block 1 | Block 2 | Block 3 | Block 4 | Block 5 | Block 6 | Block 7 | Total TFL 39 |
|---|---|---|---|---|---|---|---|---|
| **Total Forest** | | | | | | | | |
| Timber | 66.5 | 65.6 | 100.0 | 86.7 | 0.0 | 66.8 | 37.6 | 63.2 |
| Habitat | 33.5 | 28.5 | 0.0 | 13.3 | 92.0 | 16.1 | 27.3 | 27.1 |
| Old-growth | 0.0 | 5.9 | 0.0 | 0.0 | 7.1 | 17.1 | 35.1 | 9.7 |
| **Productive Forest** | | | | | | | | |
| Timber | 73.2 | 67.9 | 100.0 | 87.3 | 0.0 | 70.3 | 41.0 | 68.6 |
| Habitat | 26.8 | 26.9 | 0.0 | 12.7 | 90.2 | 17.2 | 25.4 | 23.4 |
| Old-growth | 0.0 | 5.2 | 0.0 | 0.0 | 9.8 | 12.5 | 33.6 | 8.0 |
| **Timber Harvesting Landbase** | | | | | | | | |
| Timber | 74.7 | 72.7 | 100.0 | 88.4 | 0.0 | 76.6 | 53.0 | 74.3 |
| Habitat | 25.3 | 26.4 | 0.0 | 11.6 | 97.2 | 20.5 | 33.0 | 24.0 |
| Old-growth | 0.0 | 0.9 | 0.0 | 0.0 | 2.8 | 2.9 | 14.0 | 1.7 |
| **Mature Volumes** | | | | | | | | |
| **Total** | | | | | | | | |
| Timber | 61.9 | 54.9 | 100.0 | 85.7 | 0.0 | 66.8 | 37.3 | 58.0 |
| Habitat | 38.1 | 35.7 | 0.0 | 14.3 | 91.7 | 16.1 | 24.9 | 28.6 |
| Old-growth | 0.0 | 9.4 | 0.0 | 0.0 | 8.3 | 17.1 | 37.8 | 13.4 |
| **Timber Harvesting Landbase** | | | | | | | | |
| Timber | 65.1 | 60.6 | 100.0 | 88.1 | 0.0 | 75.4 | 49.6 | 65.8 |
| Habitat | 34.9 | 37.6 | 0.0 | 11.9 | 98.0 | 20.2 | 34.4 | 30.8 |
| Old-growth | 0.0 | 1.8 | 0.0 | 0.0 | 2.0 | 4.4 | 16.0 | 3.4 |

The recently approved protected areas in Blocks 2 and 4 (Section 5.2) are included in the total forest and productive forest percentages in Table 8–19.

Option 2 will exclude the stewardship zones and will not make the additional allowances for variable retention.

There are potential gains from using the variable retention approach to access timber in otherwise reserved areas. There are substantial opportunities for harvesting individual trees or small patches of timber economically while having minimal impacts on the site and hence not detracting from non-timber objectives. Helicopter logging techniques, including lifting individual tress from the stump, have added substantially to these opportunities. A project has been initiated by North Island Woodlands to develop and apply acceptable practices for accessing some of this timber. Option 3 examines the possible impact by assuming that 5% of the mature timber that is classified as on sensitive sites, in non-timber resource areas or is currently uneconomic as accessible over the next 20 years.

# ATTACHMENT 1

## YIELD TABLES

The yield tables listed in the following pages were generated with the yield model Y–XENO.

The index to the tables indicates the conditions each table represents.

The yields in the tables do not include adjustments for regeneration delays, tree improvement, breakage, decay, or non-productive areas.

**Table 1. Index for Yield Tables**

| Yield Table ID*, ** | No. of Planted Stems | No. of Natural Stems | Percent Survival Planted | % Distributio n Natural | Regen Lag (natural) negative = early | Years of Natural Regen | Spaced 0 = no 1 = yes | Natural regen Site Index | Page # |
|---|---|---|---|---|---|---|---|---|---|
| **HEMLOCK** | | | | | | | | | |
| h1 | 1 200 | 500 | 85 | 50 | -2 | 4 | 0 | | **67** |
| h2 | 1 200 | 1 200 | 90 | 75 | -2 | 5 | 0 | | **68** |
| h3 | 900 | 3 000 | 90 | 80 | -2 | 5 | 0 | | **69** |
| h4 | 800 | 12 000 | 85 | 100 | -3 | 8 | 0 | | **70** |
| h5 | | 600 | | 70 | | 5 | 0 | | **71** |
| h6 | | 1 500 | | 90 | | 5 | 0 | | **72** |
| h7a | | 6 000 | | 100 | | 5 | 0 | | **73** |
| h7b | | 6 000 | | 100 | | 5 | 1 | | **74** |
| h8a | | 12 000 | | 100 | | 5 | 0 | | **75** |
| h8b | | 12 000 | | 100 | | 5 | 1 | | **76** |
| *a = unspaced, b = spaced @ 15 years to 1200 sph | | | | | | | | | |
| **DOUGLAS-FIR** | | | | | | | | | |
| f1a | 1 200 | 500 | 85 | 60 | 0 | 4 | 0 | | **77** |
| f1b | 1 200 | 500 | 85 | 60 | 0 | 4 | 0 | Planted-3 m | **78** |
| f2a | 1 200 | 1 200 | 90 | 75 | 0 | 4 | 0 | | **79** |
| f2b | 1 200 | 1 200 | 90 | 75 | 0 | 4 | 0 | Planted-3 m | **80** |
| f3a | 1 200 | 3 000 | 90 | 90 | -1 | 5 | 0 | | **81** |
| f3b | 1 200 | 3 000 | 90 | 90 | -1 | 5 | 0 | Planted-3 m | **82** |
| f4 | | 600 | | 70 | 0 | 5 | 0 | | **83** |
| f5 | | 1 500 | | 90 | 0 | 5 | 0 | | **84** |
| f6 | | 3 000 | | 90 | 0 | 5 | 0 | | **85** |
| f7 | | 6 000 | | 90 | 0 | 5 | 0 | | **86** |

**a = fir naturals, b = hemlock naturals

**Table 2. Allocation of regeneration models to landbase**

| Yield Table | HEMLOCK-TYPE | | | TABLE 6- | | | | | | | Yield Table |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | plant | natural | notes | 4a* | 4b | 4c | 4d | 4e | 4f | | |
| | | | | Percent of Net Timber Harvesting Landbase | | | | | | *Total* | |
| **h1** | 1 200 | 500 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | *0.2* | **h1** |
| **h2** | 1 200 | 1 200 | | 13.7 | 2.3 | 0.0 | 1.9 | 0.1 | 0.0 | *18.0* | **h2** |
| **h3** | 900 | 3 000 | | 11.7 | 2.2 | 0.3 | 3.7 | 0.6 | 0.0 | *18.5* | **h3** |
| **h4** | 800 | 12 000 | | 11.8 | 2.4 | 0.0 | 0.0 | 0.5 | 0.0 | *14.7* | **h4** |
| **h5** | | 600 | | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | *0.1* | **h5** |
| **h6** | | 1 500 | | 0.0 | 0.5 | 0.1 | 0.0 | 0.3 | 0.0 | *0.9* | **h6** |
| **h7a** | | 6 000 | | 2.2 | 1.2 | 0.3 | 1.4 | 0.5 | 0.0 | *5.6* | **h7a** |
| **h7b** | | 6 000 | spaced | 0.0 | 0.5 | 0.0 | 0.0 | 0.2 | 0.0 | *0.7* | **h7b** |
| **h8** | | 12 000 | | 13.9 | 2.9 | 0.5 | 0.0 | 0.0 | 0.0 | *17.3* | **h8** |
| **h8b** | | 12 000 | spaced | 0.0 | 1.2 | 0.1 | 0.0 | 0.0 | 0.0 | *1.3* | **h8b** |
| | | | | *53.3* | *13.2* | *1.4* | *7.0* | *2.4* | *0.0* | *77.3* | |

| Yield Table | FIR-TYPE | | | Table 6- | | | | | | | Yield Table |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | plant | natural | naturals | 4g | 4h | 4i | | | | | |
| | | | | Percent of Net THLB | | | | | | *Total* | |
| **f1a** | 1 200 | 500 | fir | 6.6 | 0.0 | 0.0 | | | | *6.6* | **f1a** |
| **f1b** | 1 200 | 500 | hemlock | 2.6 | 0.0 | 0.0 | | | | *2.6* | **f1b** |
| **f2a** | 1 200 | 1 200 | fir | 0.0 | 1.0 | 0.0 | | | | *1.0* | **f2a** |
| **f2b** | 1 200 | 1 200 | hemlock | 6.3 | 0.7 | 0.1 | | | | *7.1* | **f2b** |
| **f3a** | 1 200 | 3 000 | fir | 0.0 | 0.0 | 0.0 | | | | *0.0* | **f3a** |
| **f3b** | 1 200 | 3 000 | hemlock | 0.1 | 1.1 | 0.0 | | | | *1.2* | **f3b** |
| **f4** | | 600 | fir | 0.0 | 0.0 | 0.0 | | | | *0.0* | **f4** |
| **f5** | | 1 500 | fir | 0.7 | 0.7 | 0.1 | | | | *1.5* | **f5** |
| **f6** | | 3 000 | fir | 1.9 | 0.7 | 0.1 | | | | *2.7* | **f6** |
| | | | | *18.2* | *4.2* | *0.3* | | | | *22.7* | |

Yield Table: see Section 6.2.1. Table 6-4a,…,6-4i: see Section 6.2.2

Net Timber Harvesting Landbase includes allowances for Forest Project leave volumes.

*4a — Hemlock I Dispersed/Aggregated Retention Timber/Habitat Zone
4b — Hemlock II: Shelterwood/Group Selection — Timber Habitat Zone
4c — Hemlock III: Shelterwood/Group Selection — Old-Growth Zone
4d — Hemlock I — Block 1: Dispersed/Aggregated Retention — Timber/Habitat Zone
4e — Hemlock II — Block 1: Shelterwood/Group Selection — Timber/Habitat Zone
4f — Hemlock III — Block 1: Shelterwood/Group Selection — Old Growth Zone
4g — Fir I: Dispersed/Aggregated Retention — Timber/Habitat Zone
4h — Fir II: Shelterwood/Group Selection — Timber/Habitat Zone
4i — Fir III: Shelterwood/Group Selection — Old-Growth Zone

## Table h1

| Yield Table Volumes Used in TFL 39 Management and Working Plan No. 8 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Age** | **Site Index** | | | | | | | | | | |
| | **12** | **15** | **18** | **21** | **24** | **27** | **30** | **33** | **36** | **39** | **42** |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 7 | 16 | 32 |
| 20 | 0 | 0 | 0 | 0 | 1 | 4 | 11 | 22 | 42 | 72 | 117 |
| 25 | 0 | 0 | 0 | 2 | 6 | 17 | 38 | 71 | 121 | 186 | 276 |
| 30 | 0 | 0 | 1 | 6 | 23 | 55 | 105 | 167 | 251 | 354 | 487 |
| 35 | 0 | 0 | 4 | 23 | 65 | 123 | 200 | 291 | 408 | 551 | 721 |
| 40 | 0 | 2 | 18 | 61 | 125 | 206 | 310 | 430 | 579 | 753 | 932 |
| 45 | 0 | 9 | 48 | 109 | 195 | 299 | 428 | 578 | 752 | 933 | *1097 |
| 50 | 1 | 29 | 85 | 163 | 270 | 398 | 552 | 725 | 906 | *1072 | 1212 |
| 55 | 7 | 55 | 125 | 221 | 349 | 500 | 672 | 853 | *1021 | 1165 | 1269 |
| 60 | 20 | 83 | 168 | 282 | 430 | 599 | 779 | 953 | 1104 | 1218 | 1292 |
| 65 | 38 | 113 | 212 | 344 | 509 | 688 | 868 | *1034 | 1166 | 1257 | 1305 |
| 70 | 57 | 143 | 258 | 404 | 582 | 766 | *946 | 1100 | 1209 | 1280 | 1309 |
| 75 | 76 | 175 | 303 | 461 | 648 | 836 | 1012 | 1150 | 1237 | 1288 | 1306 |
| 80 | 96 | 207 | 346 | 511 | 708 | *898 | 1067 | 1188 | 1253 | 1289 | 1302 |
| 85 | 116 | 238 | 384 | 560 | 763 | 952 | 1111 | 1214 | 1262 | 1285 | 1298 |
| 90 | 136 | 267 | 420 | 606 | 815 | 1000 | 1145 | 1231 | 1265 | 1280 | 1295 |
| 95 | 156 | 293 | 456 | 648 | *862 | 1042 | 1170 | 1240 | 1266 | 1275 | 1294 |
| 100 | 174 | 319 | 490 | 688 | 903 | 1076 | 1188 | 1245 | 1264 | 1272 | 1293 |
| 105 | 191 | 343 | 522 | 725 | 941 | 1103 | 1202 | 1249 | 1264 | 1270 | 1294 |
| 110 | 206 | 366 | 552 | *761 | 973 | 1126 | 1211 | 1251 | 1263 | 1270 | 1296 |
| 115 | 221 | 387 | 580 | 793 | 1001 | 1143 | 1218 | 1249 | 1263 | 1271 | 1298 |
| 120 | 236 | 407 | 607 | 823 | 1027 | 1159 | 1223 | 1246 | 1265 | 1273 | 1301 |
| 125 | 250 | 427 | *632 | 850 | 1048 | 1169 | 1225 | 1244 | 1265 | 1274 | 1303 |
| 130 | 263 | 447 | 655 | 875 | 1065 | 1175 | 1227 | 1245 | 1264 | 1277 | 1306 |
| 135 | 276 | *465 | 677 | 898 | 1079 | 1180 | 1228 | 1245 | 1264 | 1280 | 1309 |
| 140 | 288 | 482 | 696 | 919 | 1091 | 1185 | 1228 | 1244 | 1263 | 1282 | 1312 |
| 145 | 299 | 497 | 715 | 937 | 1101 | 1189 | 1226 | 1246 | 1264 | 1284 | 1315 |
| 150 | *310 | 512 | 733 | 953 | 1109 | 1192 | 1225 | 1247 | 1264 | 1286 | 1317 |
| 155 | 321 | 526 | 749 | 969 | 1117 | 1194 | 1224 | 1247 | 1265 | 1288 | 1319 |
| 160 | 330 | 539 | 763 | 982 | 1122 | 1194 | 1225 | 1245 | 1266 | 1290 | 1321 |
| 165 | 340 | 551 | 777 | 995 | 1127 | 1194 | 1224 | 1245 | 1266 | 1291 | 1323 |
| 170 | 348 | 562 | 789 | 1006 | 1131 | 1194 | 1223 | 1245 | 1267 | 1292 | 1324 |
| 175 | 356 | 573 | 802 | 1014 | 1135 | 1194 | 1222 | 1245 | 1267 | 1294 | 1326 |
| 180 | 364 | 582 | 813 | 1021 | 1138 | 1195 | 1221 | 1245 | 1267 | 1295 | 1326 |
| 185 | 371 | 591 | 821 | 1027 | 1141 | 1195 | 1221 | 1245 | 1267 | 1296 | 1327 |
| 190 | 377 | 599 | 830 | 1034 | 1142 | 1195 | 1221 | 1244 | 1267 | 1297 | 1327 |
| 195 | 383 | 607 | 838 | 1039 | 1144 | 1195 | 1221 | 1244 | 1267 | 1296 | 1327 |
| 200 | 389 | 614 | 846 | 1044 | 1145 | 1195 | 1220 | 1243 | 1266 | 1295 | 1327 |
| Maximum MAI | 2.1 | 3.4 | 5.1 | 6.9 | 9.1 | 11.2 | 13.5 | 15.9 | 18.6 | 21.4 | 24.4 |
| Age for Maximum MAI | 150 | 135 | 125 | 110 | 95 | 80 | 70 | 65 | 55 | 50 | 45 |

These volumes are from Xeno yield tables with no reductions or net downs.
The initial conditions for this table are:

| | |
|---|---|
| Number of planted stems | 1200/ha Hemlock |
| Number of natural stems | 500/ha Hemlock |
| Percent survival of planted stems | 85% |
| Percent distribution of natural stems | 50% |
| Regeneration delay for natural stems ( negative = early) | –2 |
| Years of natural regeneration | 4 |

No spacing
Site index the same for planted and natural stems

## Table h2

| Yield Table Volumes Used in TFL 39 Management and Working Plan No. 8 | |
|---|---|
| **Total Age** | **Site Index** |

| | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 | 39 | 42 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 8 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 5 | 14 | 29 | 54 |
| 20 | 0 | 0 | 0 | 0 | 2 | 7 | 19 | 38 | 68 | 112 | 173 |
| 25 | 0 | 0 | 0 | 4 | 12 | 30 | 62 | 108 | 170 | 252 | 356 |
| 30 | 0 | 0 | 3 | 11 | 37 | 82 | 144 | 221 | 316 | 434 | 574 |
| 35 | 0 | 1 | 8 | 35 | 88 | 161 | 250 | 355 | 480 | 625 | 790 |
| 40 | 0 | 3 | 28 | 79 | 157 | 253 | 366 | 495 | 642 | 810 | 981 |
| 45 | 0 | 14 | 63 | 134 | 232 | 349 | 484 | 632 | 800 | 978 | *1134 |
| 50 | 2 | 37 | 105 | 193 | 310 | 446 | 598 | 763 | 944 | *1107 | 1229 |
| 55 | 10 | 67 | 150 | 254 | 389 | 541 | 706 | 883 | *1056 | 1186 | 1259 |
| 60 | 26 | 98 | 196 | 315 | 465 | 628 | 802 | *979 | 1131 | 1223 | 1263 |
| 65 | 46 | 131 | 243 | 376 | 537 | 706 | 890 | 1058 | 1183 | 1244 | 1263 |
| 70 | 67 | 165 | 290 | 433 | 601 | 779 | *968 | 1120 | 1214 | 1250 | 1258 |
| 75 | 88 | 199 | 335 | 484 | 658 | 849 | 1033 | 1163 | 1229 | 1245 | 1249 |
| 80 | 110 | 232 | 376 | 531 | 713 | 912 | 1087 | 1189 | 1231 | 1239 | 1242 |
| 85 | 133 | 264 | 412 | 574 | 767 | *969 | 1126 | 1203 | 1227 | 1232 | 1237 |
| 90 | 155 | 292 | 446 | 614 | 817 | 1019 | 1156 | 1206 | 1220 | 1226 | 1233 |
| 95 | 176 | 318 | 478 | 652 | *864 | 1060 | 1172 | 1204 | 1214 | 1220 | 1231 |
| 100 | 195 | 343 | 508 | 692 | 906 | 1092 | 1180 | 1200 | 1208 | 1217 | 1232 |
| 105 | 212 | 366 | 536 | 729 | 944 | 1116 | 1184 | 1196 | 1204 | 1215 | 1235 |
| 110 | 228 | 388 | *563 | *765 | 979 | 1133 | 1184 | 1192 | 1202 | 1214 | 1238 |
| 115 | 244 | 408 | 588 | 799 | 1009 | 1144 | 1183 | 1188 | 1199 | 1215 | 1243 |
| 120 | 258 | 427 | 611 | 829 | 1033 | 1154 | 1180 | 1183 | 1198 | 1217 | 1247 |
| 125 | 272 | *446 | 633 | 857 | 1052 | 1161 | 1176 | 1182 | 1198 | 1221 | 1251 |
| 130 | 285 | 463 | 656 | 882 | 1071 | 1164 | 1173 | 1180 | 1198 | 1223 | 1255 |
| 135 | 297 | 479 | 678 | 907 | 1083 | 1165 | 1169 | 1178 | 1199 | 1225 | 1258 |
| 140 | 309 | 494 | 698 | 929 | 1095 | 1163 | 1165 | 1177 | 1201 | 1227 | 1261 |
| 145 | *320 | 509 | 717 | 948 | 1105 | 1162 | 1162 | 1177 | 1203 | 1229 | 1264 |
| 150 | 331 | 522 | 736 | 966 | 1112 | 1162 | 1161 | 1177 | 1204 | 1231 | 1267 |
| 155 | 341 | 535 | 753 | 981 | 1117 | 1160 | 1160 | 1178 | 1206 | 1233 | 1269 |
| 160 | 350 | 546 | 770 | 995 | 1121 | 1159 | 1159 | 1177 | 1207 | 1236 | 1271 |
| 165 | 359 | 556 | 784 | 1007 | 1124 | 1157 | 1158 | 1177 | 1208 | 1238 | 1272 |
| 170 | 367 | 566 | 797 | 1018 | 1125 | 1154 | 1158 | 1176 | 1209 | 1240 | 1274 |
| 175 | 375 | 574 | 809 | 1026 | 1126 | 1153 | 1157 | 1175 | 1210 | 1242 | 1275 |
| 180 | 382 | 583 | 821 | 1033 | 1126 | 1151 | 1157 | 1175 | 1210 | 1242 | 1275 |
| 185 | 389 | 591 | 831 | 1040 | 1127 | 1149 | 1156 | 1175 | 1211 | 1243 | 1276 |
| 190 | 395 | 599 | 841 | 1046 | 1128 | 1149 | 1155 | 1175 | 1212 | 1243 | 1276 |
| 195 | 401 | 606 | 849 | 1051 | 1128 | 1149 | 1154 | 1174 | 1212 | 1244 | 1276 |
| 200 | 406 | 613 | 858 | 1054 | 1129 | 1148 | 1153 | 1173 | 1212 | 1244 | 1276 |
| Maximum MAI | 2.2 | 3.6 | 5.1 | 7.0 | 9.1 | 11.4 | 13.8 | 16.3 | 19.2 | 22.1 | 25.2 |
| Age for Maximum MAI | 145 | 125 | 110 | 110 | 95 | 85 | 70 | 60 | 55 | 50 | 45 |

These volumes are from Xeno yield tables with no reductions or net downs.
The initial conditions for this table are:

| | |
|---|---|
| Number of planted stems | 1200/ha Hemlock |
| Number of natural stems | 1200/ha Hemlock |
| Percent survival of planted stems | 90% |
| Percent distribution of natural stems | 75% |
| Regeneration delay for natural stems ( negative = early ) | –2 |
| Years of natural regeneration | 5 |

No spacing
Site index the same for planted and natural stems

## Table h3

**Yield Table Volumes Used in TFL 39 Management and Working Plan No. 8**

| Total Age | Site Index | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 | 39 | 42 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 6 | 17 |
| 15 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 10 | 25 | 50 | 88 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | 0 | 0 | 0 | 0 | 3 | 13 | 31 | 61 | 104 | 161 | 237 |
| 25 | 0 | 0 | 1 | 6 | 20 | 48 | 92 | 151 | 223 | 312 | 417 |
| 30 | 0 | 1 | 5 | 19 | 54 | 111 | 184 | 269 | 365 | 476 | 600 |
| 35 | 0 | 2 | 14 | 48 | 112 | 195 | 290 | 395 | 507 | 634 | 769 |
| 40 | 0 | 6 | 36 | 94 | 183 | 287 | 397 | 515 | 639 | 778 | 930 |
| 45 | 1 | 18 | 71 | 151 | 258 | 378 | 498 | 626 | 763 | 917 | *1073 |
| 50 | 3 | 41 | 113 | 211 | 334 | 463 | 592 | 731 | 882 | *1038 | 1169 |
| 55 | 11 | 71 | 159 | 272 | 406 | 541 | 677 | 826 | *982 | 1115 | 1218 |
| 60 | 27 | 103 | 207 | 331 | 472 | 611 | 756 | *913 | 1057 | 1171 | 1248 |
| 65 | 46 | 137 | 254 | 386 | 530 | 675 | 829 | 988 | 1117 | 1215 | 1268 |
| 70 | 67 | 172 | 298 | 435 | 581 | 736 | *901 | 1050 | 1164 | 1243 | 1277 |
| 75 | 89 | 207 | 340 | 478 | 628 | 797 | 962 | 1101 | 1195 | 1254 | 1278 |
| 80 | 112 | 241 | 376 | 516 | 675 | *856 | 1011 | 1139 | 1216 | 1258 | 1275 |
| 85 | 135 | 272 | 408 | 552 | 720 | 906 | 1052 | 1168 | 1229 | 1259 | 1271 |
| 90 | 159 | 299 | 437 | 587 | *765 | 950 | 1088 | 1189 | 1239 | 1258 | 1269 |
| 95 | 181 | 323 | 465 | *620 | 805 | 989 | 1117 | 1203 | 1242 | 1258 | 1267 |
| 100 | 201 | 346 | *490 | 652 | 847 | 1020 | 1138 | 1213 | 1243 | 1257 | 1267 |
| 105 | 218 | 367 | 514 | 684 | 883 | 1048 | 1156 | 1220 | 1243 | 1258 | 1267 |
| 110 | 234 | 386 | 537 | 713 | 914 | 1071 | 1170 | 1224 | 1243 | 1256 | 1269 |
| 115 | 250 | *405 | 558 | 742 | 940 | 1091 | 1182 | 1227 | 1242 | 1255 | 1270 |
| 120 | 264 | 422 | 578 | 769 | 964 | 1109 | 1190 | 1228 | 1239 | 1255 | 1272 |
| 125 | 278 | 438 | 597 | 795 | 983 | 1122 | 1194 | 1228 | 1238 | 1255 | 1274 |
| 130 | 291 | 452 | 617 | 820 | 1000 | 1133 | 1198 | 1228 | 1236 | 1253 | 1276 |
| 135 | *303 | 466 | 634 | 842 | 1015 | 1142 | 1200 | 1228 | 1237 | 1254 | 1278 |
| 140 | 314 | 479 | 651 | 862 | 1029 | 1150 | 1201 | 1227 | 1236 | 1255 | 1280 |
| 145 | 324 | 492 | 666 | 879 | 1042 | 1154 | 1202 | 1226 | 1235 | 1257 | 1281 |
| 150 | 334 | 503 | 682 | 893 | 1054 | 1159 | 1204 | 1223 | 1235 | 1259 | 1283 |
| 155 | 343 | 514 | 697 | 904 | 1065 | 1162 | 1204 | 1221 | 1235 | 1259 | 1284 |
| 160 | 352 | 524 | 711 | 915 | 1072 | 1163 | 1204 | 1218 | 1234 | 1260 | 1284 |
| 165 | 360 | 533 | 724 | 927 | 1080 | 1166 | 1202 | 1216 | 1233 | 1262 | 1285 |
| 170 | 368 | 542 | 736 | 937 | 1085 | 1166 | 1201 | 1214 | 1233 | 1262 | 1285 |
| 175 | 374 | 550 | 746 | 947 | 1090 | 1166 | 1200 | 1213 | 1233 | 1262 | 1286 |
| 180 | 381 | 558 | 757 | 955 | 1094 | 1167 | 1199 | 1213 | 1233 | 1263 | 1286 |
| 185 | 387 | 565 | 766 | 962 | 1099 | 1167 | 1198 | 1214 | 1233 | 1263 | 1286 |
| 190 | 392 | 571 | 775 | 967 | 1102 | 1165 | 1197 | 1213 | 1232 | 1263 | 1286 |
| 195 | 397 | 578 | 783 | 973 | 1104 | 1165 | 1196 | 1212 | 1231 | 1263 | 1285 |
| 200 | 402 | 583 | 790 | 978 | 1105 | 1165 | 1196 | 1211 | 1230 | 1262 | 1285 |
| Maximum MAI | 2.2 | 3.5 | 4.9 | 6.5 | 8.5 | 10.7 | 12.9 | 15.2 | 17.9 | 20.8 | 23.8 |
| Age for Maximum MAI | 135 | 115 | 100 | 95 | 90 | 80 | 70 | 60 | 55 | 50 | 45 |

These volumes are from Xeno yield tables with no reductions or net downs.
The initial conditions for this table are:

| | |
|---|---|
| Number of planted stems | 900/ha Hemlock |
| Number of natural stems | 3000/ha Hemlock |
| Percent survival of planted stems | 90% |
| Percent distribution of natural stems | 80% |
| Regeneration delay for natural stems ( negative = early) | –2 |
| Years of natural regeneration | 5 |

No spacing
Site index the same for planted and natural stems

## Table h4

**Yield Table Volumes Used in TFL 39 Management and Working Plan No. 8**

| Total Age | Site Index | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **12** | **15** | **18** | **21** | **24** | **27** | **30** | **33** | **36** | **39** | **42** |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 10 | 29 | 65 | 125 |
| 15 | 0 | 0 | 0 | 0 | 1 | 8 | 26 | 64 | 127 | 217 | 330 |
| 20 | 0 | 0 | 0 | 2 | 16 | 49 | 108 | 188 | 286 | 395 | 513 |
| 25 | 0 | 0 | 3 | 22 | 65 | 133 | 225 | 326 | 431 | 539 | *652 |
| 30 | 0 | 2 | 20 | 60 | 135 | 231 | 339 | 444 | 548 | 654 | 771 |
| 35 | 0 | 10 | 44 | 111 | 213 | 325 | 439 | 543 | 646 | 761 | 894 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 40 | 2 | 21 | 78 | 168 | 291 | 411 | 524 | 627 | 739 | 872 | 1028 |
| 45 | 5 | 39 | 118 | 227 | 366 | 486 | *596 | *706 | *834 | *985 | 1149 |
| 50 | 10 | 62 | 162 | 288 | 432 | *551 | 661 | 784 | 926 | 1086 | 1211 |
| 55 | 18 | 90 | 210 | 347 | 491 | 604 | 720 | 859 | 1013 | 1159 | 1232 |
| 60 | 31 | 120 | 260 | 404 | *539 | 653 | 781 | 935 | 1095 | 1202 | 1239 |
| 65 | 47 | 154 | 310 | 451 | 580 | 697 | 840 | 1009 | 1155 | 1218 | 1232 |
| 70 | 65 | 190 | 354 | *489 | 618 | 743 | 901 | 1077 | 1187 | 1216 | 1222 |
| 75 | 85 | 228 | 391 | 522 | 654 | 793 | 957 | 1133 | 1197 | 1208 | 1212 |
| 80 | 106 | 262 | 424 | 552 | 690 | 840 | 1013 | 1170 | 1194 | 1198 | 1203 |
| 85 | 129 | 293 | *454 | 579 | 726 | 884 | 1062 | 1186 | 1185 | 1191 | 1199 |
| 90 | 152 | 321 | 479 | 605 | 762 | 931 | 1104 | 1189 | 1177 | 1184 | 1196 |
| 95 | 175 | 345 | 501 | 629 | 795 | 974 | 1132 | 1185 | 1165 | 1180 | 1196 |
| 100 | 195 | 367 | 520 | 655 | 828 | 1009 | 1149 | 1178 | 1159 | 1178 | 1196 |
| 105 | 214 | *388 | 538 | 678 | 860 | 1043 | 1159 | 1172 | 1154 | 1176 | 1197 |
| 110 | 233 | 407 | 557 | 701 | 893 | 1067 | 1159 | 1167 | 1151 | 1173 | 1198 |
| 115 | 250 | 423 | 574 | 723 | 923 | 1091 | 1156 | 1162 | 1148 | 1171 | 1200 |
| 120 | 266 | 438 | 588 | 744 | 948 | 1104 | 1148 | 1158 | 1146 | 1170 | 1201 |
| 125 | 281 | 451 | 603 | 764 | 974 | 1115 | 1141 | 1153 | 1145 | 1171 | 1203 |
| 130 | 296 | 464 | 615 | 783 | 995 | 1124 | 1137 | 1148 | 1144 | 1169 | 1204 |
| 135 | 309 | 474 | 629 | 801 | 1017 | 1124 | 1136 | 1145 | 1144 | 1170 | 1206 |
| 140 | *322 | 485 | 641 | 820 | 1035 | 1121 | 1134 | 1143 | 1144 | 1169 | 1208 |
| 145 | 333 | 494 | 652 | 837 | 1053 | 1122 | 1130 | 1140 | 1144 | 1170 | 1209 |
| 150 | 343 | 503 | 662 | 852 | 1069 | 1121 | 1127 | 1138 | 1143 | 1170 | 1210 |
| 155 | 353 | 512 | 674 | 865 | 1081 | 1113 | 1127 | 1138 | 1142 | 1170 | 1210 |
| 160 | 363 | 520 | 685 | 880 | 1092 | 1108 | 1125 | 1137 | 1141 | 1169 | 1211 |
| 165 | 373 | 526 | 695 | 893 | 1097 | 1102 | 1123 | 1136 | 1141 | 1169 | 1211 |
| 170 | 381 | 533 | 706 | 903 | 1104 | 1101 | 1124 | 1135 | 1140 | 1169 | 1211 |
| 175 | 387 | 539 | 714 | 913 | 1109 | 1100 | 1122 | 1134 | 1139 | 1169 | 1210 |
| 180 | 394 | 545 | 722 | 923 | 1111 | 1099 | 1122 | 1132 | 1139 | 1168 | 1209 |
| 185 | 399 | 550 | 728 | 929 | 1113 | 1096 | 1119 | 1131 | 1138 | 1167 | 1209 |
| 190 | 404 | 555 | 736 | 938 | 1116 | 1098 | 1113 | 1130 | 1137 | 1166 | 1209 |
| 195 | 409 | 559 | 742 | 947 | 1116 | 1097 | 1112 | 1129 | 1136 | 1166 | 1208 |
| 200 | 413 | 562 | 748 | 953 | 1117 | 1097 | 1112 | 1128 | 1135 | 1165 | 1208 |
| Maximum MAI | 2.3 | 3.7 | 5.3 | 7.0 | 9.0 | 11.0 | 13.2 | 15.7 | 18.5 | 21.9 | 26.1 |
| Age for Maximum MAI | 140 | 105 | 85 | 70 | 60 | 50 | 45 | 45 | 45 | 45 | 25 |

These volumes are from Xeno yield tables with no reductions or net downs.
The initial conditions for this table are:

| | |
|---|---|
| Number of planted stems | 800/ha Hemlock |
| Number of natural stems | 12 000/ha Hemlock |
| Percent survival of planted stems | 90% |
| Percent distribution of natural stems | 85% |
| Regeneration delay for natural stems ( negative = early ) | –3 |
| Years of natural regeneration | 8 |

No spacing
Site index the same for planted and natural stems

## Table h5

**Yield Table Volumes Used in TFL 39 Management and Working Plan No. 8**

| Total Age | Site Index | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **12** | **15** | **18** | **21** | **24** | **27** | **30** | **33** | **36** | **39** | **42** |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 6 | 12 |
| 20 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 8 | 15 | 26 | 44 |
| 25 | 0 | 0 | 0 | 1 | 2 | 6 | 13 | 26 | 45 | 72 | 111 |
| 30 | 0 | 0 | 0 | 2 | 8 | 20 | 38 | 64 | 100 | 148 | 212 |
| 35 | 0 | 0 | 2 | 8 | 24 | 47 | 78 | 119 | 175 | 245 | 333 |
| 40 | 0 | 1 | 7 | 23 | 48 | 84 | 129 | 188 | 264 | 352 | 457 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 45 | 0 | 3 | 18 | 43 | 79 | 128 | 189 | 266 | 359 | 460 | 575 |
| 50 | 0 | 11 | 33 | 67 | 115 | 178 | 256 | 348 | 453 | 562 | 684 |
| 55 | 2 | 21 | 51 | 93 | 155 | 233 | 325 | 427 | 540 | 652 | 775 |
| 60 | 8 | 33 | 70 | 123 | 199 | 289 | 391 | 498 | 614 | 726 | *847 |
| 65 | 15 | 46 | 91 | 156 | 243 | 343 | 450 | 561 | 678 | 793 | 916 |
| 70 | 22 | 59 | 114 | 189 | 286 | 393 | 505 | 619 | 740 | *857 | 982 |
| 75 | 30 | 74 | 137 | 221 | 326 | 438 | 556 | 673 | *797 | 916 | 1041 |
| 80 | 39 | 89 | 160 | 251 | 364 | 482 | 604 | *722 | 848 | 969 | 1095 |
| 85 | 48 | 104 | 182 | 280 | 400 | 523 | 647 | 767 | 895 | 1016 | 1144 |
| 90 | 57 | 119 | 203 | 308 | 434 | 560 | *687 | 809 | 939 | 1058 | 1188 |
| 95 | 66 | 133 | 223 | 335 | 466 | 595 | 723 | 847 | 978 | 1097 | 1228 |
| 100 | 74 | 146 | 243 | 360 | 496 | *627 | 757 | 883 | 1013 | 1134 | 1264 |
| 105 | 82 | 159 | 263 | 384 | 524 | 657 | 790 | 916 | 1046 | 1166 | 1296 |
| 110 | 90 | 172 | 281 | 407 | *551 | 683 | 819 | 947 | 1075 | 1196 | 1326 |
| 115 | 97 | 184 | 298 | 428 | 575 | 709 | 847 | 975 | 1102 | 1224 | 1352 |
| 120 | 104 | 196 | 315 | 449 | 597 | 732 | 871 | 1001 | 1127 | 1249 | 1377 |
| 125 | 111 | 208 | 331 | *468 | 617 | 755 | 893 | 1024 | 1150 | 1271 | 1399 |
| 130 | 118 | 219 | 346 | 485 | 635 | 775 | 914 | 1045 | 1170 | 1293 | 1419 |
| 135 | 125 | 229 | 360 | 502 | 653 | 793 | 933 | 1064 | 1188 | 1312 | 1437 |
| 140 | 131 | 239 | *373 | 517 | 669 | 810 | 952 | 1082 | 1206 | 1330 | 1453 |
| 145 | 137 | 249 | 386 | 531 | 683 | 826 | 967 | 1097 | 1223 | 1344 | 1467 |
| 150 | 143 | *258 | 397 | 544 | 696 | 840 | 982 | 1113 | 1236 | 1359 | 1480 |
| 155 | 148 | 266 | 409 | 557 | 709 | 853 | 995 | 1126 | 1249 | 1371 | 1491 |
| 160 | 154 | 274 | 419 | 568 | 720 | 865 | 1006 | 1138 | 1260 | 1382 | 1502 |
| 165 | *159 | 282 | 428 | 578 | 731 | 877 | 1018 | 1148 | 1270 | 1391 | 1510 |
| 170 | 163 | 289 | 437 | 588 | 740 | 886 | 1028 | 1158 | 1279 | 1400 | 1517 |
| 175 | 168 | 295 | 445 | 596 | 749 | 895 | 1036 | 1166 | 1287 | 1407 | 1523 |
| 180 | 172 | 301 | 453 | 604 | 757 | 903 | 1045 | 1173 | 1294 | 1413 | 1529 |
| 185 | 176 | 307 | 460 | 611 | 764 | 910 | 1052 | 1179 | 1299 | 1418 | 1533 |
| 190 | 180 | 312 | 466 | 618 | 771 | 916 | 1059 | 1184 | 1304 | 1422 | 1536 |
| 195 | 183 | 317 | 472 | 624 | 776 | 923 | 1064 | 1189 | 1309 | 1426 | 1539 |
| 200 | 187 | 322 | 477 | 630 | 781 | 927 | 1069 | 1193 | 1311 | 1429 | 1541 |
| Maximum MAI | 1.0 | 1.7 | 2.7 | 3.7 | 5.0 | 6.3 | 7.6 | 9.0 | 10.6 | 12.2 | 14.1 |
| Age for Maximum MAI | 165 | 150 | 140 | 125 | 110 | 100 | 90 | 80 | 75 | 70 | 60 |

These volumes are from Xeno yield tables with no reductions or net downs.
The initial conditions for this table are:

| | |
|---|---|
| Number of natural stems | 600/ha Hemlock |
| Percent distribution of natural stems | 70% |
| Years of natural regeneration | 5 |
| No spacing | |

## Table h6

Yield Table Volumes Used in TFL 39 Management and Working Plan No. 8

| Total Age | Site Index | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 | 39 | 42 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 6 | 14 | 28 |
| 20 | 0 | 0 | 0 | 0 | 1 | 3 | 9 | 19 | 36 | 62 | 102 |
| 25 | 0 | 0 | 0 | 2 | 5 | 15 | 32 | 60 | 101 | 160 | 239 |
| 30 | 0 | 0 | 1 | 5 | 19 | 45 | 85 | 140 | 212 | 303 | 417 |
| 35 | 0 | 0 | 4 | 18 | 53 | 102 | 166 | 246 | 346 | 462 | 592 |
| 40 | 0 | 1 | 15 | 48 | 103 | 173 | 260 | 364 | 484 | 609 | 740 |
| 45 | 0 | 7 | 39 | 89 | 163 | 254 | 361 | 481 | 610 | 734 | 863 |
| 50 | 1 | 23 | 70 | 136 | 228 | 338 | 460 | 588 | 718 | *840 | *966 |
| 55 | 5 | 44 | 105 | 186 | 296 | 421 | 551 | 681 | *807 | 922 | 1046 |
| 60 | 16 | 68 | 142 | 238 | 364 | 498 | 630 | 755 | 876 | 990 | 1111 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 65 | 31 | 94 | 180 | 292 | 429 | 565 | 695 | *819 | 940 | 1054 | 1177 |
| 70 | 46 | 120 | 220 | 344 | 486 | 622 | *754 | 878 | 999 | 1115 | 1239 |
| 75 | 62 | 148 | 260 | 390 | 536 | 674 | 806 | 932 | 1053 | 1169 | 1296 |
| 80 | 79 | 175 | 297 | 432 | 580 | *721 | 853 | 980 | 1102 | 1219 | 1348 |
| 85 | 97 | 203 | 330 | 470 | 621 | 764 | 894 | 1023 | 1148 | 1266 | 1394 |
| 90 | 114 | 228 | 361 | 505 | *660 | 802 | 932 | 1064 | 1189 | 1308 | 1436 |
| 95 | 131 | 251 | 390 | 538 | 695 | 839 | 968 | 1102 | 1227 | 1347 | 1475 |
| 100 | 147 | 273 | 417 | *568 | 727 | 872 | 1001 | 1136 | 1261 | 1382 | 1510 |
| 105 | 162 | 293 | 442 | 596 | 756 | 902 | 1031 | 1168 | 1293 | 1415 | 1541 |
| 110 | 175 | 313 | 466 | 623 | 784 | 929 | 1058 | 1197 | 1322 | 1443 | 1569 |
| 115 | 188 | 332 | *489 | 647 | 808 | 954 | 1083 | 1224 | 1348 | 1469 | 1595 |
| 120 | 200 | 349 | 509 | 669 | 831 | 978 | 1107 | 1248 | 1372 | 1493 | 1618 |
| 125 | 212 | 366 | 528 | 690 | 852 | 1000 | 1129 | 1269 | 1395 | 1515 | 1639 |
| 130 | 224 | *381 | 546 | 709 | 870 | 1020 | 1150 | 1290 | 1415 | 1536 | 1658 |
| 135 | 235 | 395 | 563 | 728 | 888 | 1038 | 1169 | 1308 | 1433 | 1553 | 1675 |
| 140 | 245 | 409 | 578 | 745 | 904 | 1055 | 1185 | 1327 | 1449 | 1569 | 1689 |
| 145 | 255 | 422 | 592 | 760 | 919 | 1070 | 1201 | 1342 | 1464 | 1582 | 1702 |
| 150 | *264 | 433 | 605 | 774 | 933 | 1084 | 1215 | 1355 | 1477 | 1595 | 1714 |
| 155 | 273 | 444 | 618 | 787 | 945 | 1097 | 1229 | 1368 | 1488 | 1606 | 1724 |
| 160 | 281 | 454 | 630 | 799 | 956 | 1109 | 1241 | 1380 | 1499 | 1616 | 1733 |
| 165 | 289 | 464 | 640 | 810 | 967 | 1120 | 1252 | 1390 | 1509 | 1624 | 1741 |
| 170 | 296 | 473 | 650 | 819 | 977 | 1130 | 1261 | 1399 | 1517 | 1631 | 1748 |
| 175 | 303 | 481 | 659 | 828 | 986 | 1139 | 1270 | 1406 | 1525 | 1637 | 1754 |
| 180 | 309 | 489 | 667 | 836 | 994 | 1146 | 1277 | 1413 | 1531 | 1643 | 1759 |
| 185 | 315 | 496 | 675 | 842 | 1002 | 1154 | 1284 | 1419 | 1536 | 1649 | 1763 |
| 190 | 320 | 502 | 682 | 849 | 1008 | 1159 | 1290 | 1424 | 1541 | 1653 | 1766 |
| 195 | 325 | 508 | 688 | 855 | 1014 | 1165 | 1295 | 1429 | 1546 | 1656 | 1768 |
| 200 | 330 | 513 | 694 | 860 | 1018 | 1169 | 1301 | 1432 | 1548 | 1659 | 1770 |
| Maximum MAI | 1.8 | 2.9 | 4.2 | 5.7 | 7.3 | 9.0 | 10.8 | 12.6 | 14.7 | 16.8 | 19.3 |
| Age for Maximum MAI | 150 | 130 | 115 | 100 | 90 | 80 | 70 | 65 | 55 | 50 | 50 |

These volumes are from Xeno yield tables with no reductions or net downs.
The initial conditions for this table are:

| | |
|---|---|
| Number of natural stems | 1500/ha Hemlock |
| Percent distribution of natural stems | 90% |
| Years of natural regeneration | 5 |

No spacing

## Table h7a

**Yield Table Volumes Used in TFL 39 Management and Working Plan No. 8**

| Total Age | Site Index | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **12** | **15** | **18** | **21** | **24** | **27** | **30** | **33** | **36** | **39** | **42** |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5 | 15 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 6 | 18 | 40 | 75 |
| 20 | 0 | 0 | 0 | 0 | 2 | 10 | 29 | 60 | 107 | 169 | 248 |
| 25 | 0 | 0 | 0 | 5 | 17 | 46 | 95 | 167 | 259 | 361 | 471 |
| 30 | 0 | 0 | 3 | 16 | 53 | 121 | 214 | 326 | 450 | 568 | 672 |
| 35 | 0 | 1 | 10 | 47 | 126 | 235 | 362 | 494 | 623 | 727 | *808 |
| 40 | 0 | 4 | 35 | 108 | 225 | 362 | 503 | 636 | *747 | *834 | 906 |
| 45 | 0 | 16 | 81 | 187 | 330 | 480 | 619 | *737 | 834 | 916 | 993 |
| 50 | 2 | 45 | 142 | 272 | 429 | 579 | *706 | 811 | 905 | 991 | 1072 |
| 55 | 10 | 87 | 206 | 354 | 517 | *658 | 770 | 867 | 964 | 1050 | 1133 |
| 60 | 30 | 132 | 272 | 430 | 589 | 716 | 819 | 916 | 1018 | 1106 | 1191 |
| 65 | 57 | 180 | 334 | 495 | *644 | 759 | 862 | 966 | 1070 | 1166 | 1252 |
| 70 | 87 | 229 | 393 | 549 | 686 | 796 | 905 | 1014 | 1122 | 1222 | 1309 |
| 75 | 118 | 276 | 446 | *592 | 720 | 834 | 948 | 1060 | 1170 | 1273 | 1361 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 80 | 150 | 322 | 488 | 626 | 752 | 870 | 990 | 1100 | 1212 | 1317 | 1406 |
| 85 | 183 | 363 | *523 | 655 | 780 | 905 | 1025 | 1139 | 1253 | 1358 | 1448 |
| 90 | 215 | 397 | 551 | 681 | 808 | 939 | 1061 | 1176 | 1291 | 1397 | 1487 |
| 95 | 245 | 426 | 576 | 705 | 837 | 972 | 1095 | 1207 | 1324 | 1431 | 1521 |
| 100 | 272 | 453 | 598 | 728 | 863 | 1002 | 1125 | 1239 | 1354 | 1462 | 1552 |
| 105 | 295 | *476 | 618 | 750 | 888 | 1029 | 1154 | 1266 | 1382 | 1491 | 1581 |
| 110 | 316 | 497 | 637 | 769 | 912 | 1053 | 1179 | 1292 | 1407 | 1517 | 1607 |
| 115 | 336 | 516 | 654 | 788 | 936 | 1076 | 1201 | 1317 | 1431 | 1540 | 1629 |
| 120 | 354 | 533 | 670 | 807 | 956 | 1095 | 1222 | 1338 | 1455 | 1561 | 1650 |
| 125 | 371 | 548 | 685 | 825 | 974 | 1114 | 1240 | 1358 | 1476 | 1580 | 1669 |
| 130 | *386 | 561 | 699 | 842 | 992 | 1131 | 1257 | 1377 | 1495 | 1595 | 1687 |
| 135 | 401 | 574 | 712 | 857 | 1006 | 1147 | 1272 | 1395 | 1510 | 1611 | 1702 |
| 140 | 414 | 585 | 723 | 871 | 1021 | 1161 | 1286 | 1410 | 1526 | 1627 | 1715 |
| 145 | 426 | 595 | 734 | 885 | 1034 | 1175 | 1300 | 1423 | 1538 | 1640 | 1728 |
| 150 | 437 | 604 | 745 | 897 | 1047 | 1187 | 1312 | 1435 | 1551 | 1653 | 1738 |
| 155 | 447 | 613 | 755 | 909 | 1058 | 1199 | 1322 | 1446 | 1561 | 1663 | 1747 |
| 160 | 456 | 621 | 764 | 920 | 1069 | 1209 | 1332 | 1457 | 1570 | 1672 | 1755 |
| 165 | 465 | 628 | 773 | 930 | 1079 | 1218 | 1342 | 1465 | 1578 | 1680 | 1762 |
| 170 | 473 | 635 | 781 | 938 | 1088 | 1227 | 1350 | 1472 | 1585 | 1687 | 1767 |
| 175 | 480 | 641 | 790 | 946 | 1097 | 1235 | 1358 | 1479 | 1591 | 1693 | 1772 |
| 180 | 487 | 647 | 798 | 953 | 1103 | 1241 | 1366 | 1485 | 1596 | 1697 | 1776 |
| 185 | 492 | 652 | 804 | 960 | 1109 | 1246 | 1371 | 1492 | 1600 | 1701 | 1779 |
| 190 | 498 | 657 | 811 | 966 | 1115 | 1251 | 1375 | 1497 | 1604 | 1704 | 1782 |
| 195 | 503 | 662 | 816 | 972 | 1119 | 1256 | 1378 | 1501 | 1608 | 1706 | 1784 |
| 200 | 508 | 666 | 821 | 976 | 1124 | 1260 | 1383 | 1504 | 1611 | 1708 | 1785 |
| Maximum MAI | 3.0 | 4.5 | 6.1 | 7.9 | 9.9 | 12.0 | 14.1 | 16.4 | 18.7 | 20.9 | 23.1 |
| Age for Maximum MAI | 130 | 105 | 85 | 75 | 65 | 55 | 50 | 45 | 40 | 40 | 35 |

These volumes are from Xeno yield tables with no reductions or net downs.
The initial conditions for this table are:

| | |
|---|---|
| Number of natural stems | 6000/ha Hemlock |
| Percent distribution of natural stems | 100% |
| Years of natural regeneration | 5 |
| No spacing | |

## Table h7b

**Yield Table Volumes Used in TFL 39 Management and Working Plan No. 8**

| Total Age | Site Index | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **12** | **15** | **18** | **21** | **24** | **27** | **30** | **33** | **36** | **39** | **42** |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5 | 16 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 7 | 19 | 40 | 74 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 7 | 15 | 29 |
| 20 | 0 | 0 | 0 | 0 | 1 | 3 | 9 | 20 | 36 | 59 | 91 |
| 25 | 0 | 0 | 0 | 2 | 6 | 14 | 33 | 62 | 103 | 156 | 222 |
| 30 | 0 | 0 | 1 | 6 | 21 | 43 | 88 | 146 | 221 | 311 | 414 |
| 35 | 0 | 0 | 3 | 19 | 55 | 100 | 176 | 267 | 377 | 501 | 630 |
| 40 | 0 | 1 | 14 | 50 | 109 | 177 | 287 | 410 | 551 | 693 | 830 |
| 45 | 0 | 7 | 38 | 93 | 174 | 270 | 414 | 563 | 718 | 865 | 983 |
| 50 | 1 | 22 | 70 | 143 | 250 | 375 | 547 | 709 | 863 | *999 | *1103 |
| 55 | 5 | 44 | 106 | 201 | 333 | 484 | 672 | 833 | *974 | 1091 | 1179 |
| 60 | 15 | 69 | 147 | 264 | 420 | 593 | 782 | *927 | 1054 | 1152 | 1238 |
| 65 | 30 | 96 | 190 | 333 | 503 | 683 | 867 | 1000 | 1117 | 1211 | 1290 |
| 70 | 46 | 124 | 237 | 400 | 584 | 762 | *941 | 1062 | 1174 | 1268 | 1342 |
| 75 | 63 | 155 | 285 | 463 | 652 | 833 | 1005 | 1112 | 1220 | 1319 | 1392 |
| 80 | 80 | 186 | 332 | 521 | 715 | *895 | 1056 | 1159 | 1266 | 1365 | 1437 |
| 85 | 99 | 218 | 374 | 573 | 775 | 946 | 1104 | 1201 | 1306 | 1403 | 1477 |
| 90 | 117 | 248 | 414 | 624 | *826 | 987 | 1146 | 1236 | 1339 | 1442 | 1508 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 95 | 136 | 276 | 452 | 668 | 870 | 1024 | 1178 | 1271 | 1370 | 1480 | 1541 |
| 100 | 154 | 303 | 488 | 711 | 909 | 1055 | 1203 | 1302 | 1401 | 1506 | 1576 |
| 105 | 170 | 329 | 523 | 752 | 946 | 1080 | 1230 | 1329 | 1429 | 1531 | 1606 |
| 110 | 186 | 354 | 555 | 792 | 981 | 1111 | 1258 | 1352 | 1453 | 1554 | 1632 |
| 115 | 201 | 378 | 585 | *829 | 1009 | 1142 | 1278 | 1371 | 1476 | 1575 | 1653 |
| 120 | 216 | 401 | 613 | 855 | 1036 | 1160 | 1297 | 1392 | 1501 | 1594 | 1672 |
| 125 | 230 | 423 | *639 | 880 | 1056 | 1175 | 1316 | 1411 | 1519 | 1614 | 1686 |
| 130 | 244 | 443 | 664 | 905 | 1078 | 1194 | 1338 | 1429 | 1536 | 1634 | 1697 |
| 135 | 257 | 462 | 686 | 932 | 1097 | 1216 | 1358 | 1445 | 1553 | 1652 | 1711 |
| 140 | 270 | *480 | 707 | 953 | 1114 | 1228 | 1371 | 1461 | 1567 | 1667 | 1721 |
| 145 | 282 | 497 | 727 | 971 | 1129 | 1243 | 1379 | 1474 | 1579 | 1675 | 1732 |
| 150 | 294 | 513 | 745 | 992 | 1143 | 1258 | 1396 | 1486 | 1591 | 1685 | 1742 |
| 155 | 305 | 528 | 760 | 1003 | 1151 | 1273 | 1403 | 1496 | 1600 | 1695 | 1749 |
| 160 | 315 | 543 | 776 | 1010 | 1157 | 1283 | 1414 | 1504 | 1609 | 1704 | 1755 |
| 165 | *325 | 555 | 789 | 1010 | 1161 | 1294 | 1419 | 1511 | 1616 | 1704 | 1759 |
| 170 | 334 | 568 | 801 | 1014 | 1168 | 1305 | 1422 | 1517 | 1622 | 1706 | 1766 |
| 175 | 343 | 579 | 812 | 1026 | 1172 | 1313 | 1427 | 1526 | 1628 | 1712 | 1773 |
| 180 | 351 | 589 | 822 | 1037 | 1184 | 1313 | 1434 | 1533 | 1634 | 1716 | 1777 |
| 185 | 359 | 599 | 831 | 1043 | 1190 | 1315 | 1439 | 1538 | 1637 | 1720 | 1780 |
| 190 | 366 | 608 | 839 | 1053 | 1194 | 1318 | 1447 | 1542 | 1639 | 1720 | 1784 |
| 195 | 373 | 616 | 847 | 1064 | 1201 | 1323 | 1454 | 1545 | 1643 | 1720 | 1785 |
| 200 | 373 | 616 | 847 | 1064 | 1201 | 1323 | 1454 | 1545 | 1644 | 1721 | 1786 |
| Maximum MAI | 2.0 | 3.4 | 5.1 | 7.2 | 9.2 | 11.2 | 13.4 | 15.4 | 17.7 | 20.0 | 22.1 |
| Age for Maximum MAI | 165 | 140 | 125 | 115 | 90 | 80 | 70 | 60 | 55 | 50 | 50 |

These volumes are from Xeno yield tables with no reductions or net downs.
The initial conditions for this table are:

| | |
|---|---|
| Number of natural stems | 6000/ha Hemlock |
| Percent distribution of natural stems | 100% |
| Years of natural regeneration | 5 |

Spaced @ 15 years to 1200/ha

## Table h8a

**Yield Table Volumes Used in TFL 39 Management and Working Plan No. 8**

| Total Age | Site Index | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **12** | **15** | **18** | **21** | **24** | **27** | **30** | **33** | **36** | **39** | **42** |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 10 | 34 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 17 | 46 | 108 |
| 20 | 0 | 0 | 0 | 0 | 2 | 13 | 40 | 81 | 138 | 217 | 324 |
| 25 | 0 | 0 | 1 | 7 | 26 | 68 | 137 | 221 | 316 | 420 | 528 |
| 30 | 0 | 0 | 5 | 23 | 76 | 166 | 279 | 390 | 495 | 588 | *666 |
| 35 | 0 | 2 | 14 | 62 | 164 | 295 | 432 | 545 | *631 | *698 | 753 |
| 40 | 0 | 5 | 42 | 132 | 274 | 426 | 562 | *655 | 717 | 771 | 831 |
| 45 | 0 | 18 | 94 | 219 | 384 | 538 | *654 | 723 | 778 | 842 | 914 |
| 50 | 2 | 49 | 159 | 308 | 482 | *620 | 713 | 774 | 838 | 911 | 991 |
| 55 | 10 | 93 | 229 | 392 | 559 | 676 | 757 | 817 | 890 | 968 | 1050 |
| 60 | 30 | 142 | 298 | 467 | *616 | 715 | 792 | 858 | 941 | 1024 | 1108 |
| 65 | 58 | 193 | 364 | 526 | 655 | 743 | 828 | 904 | 994 | 1081 | 1169 |
| 70 | 89 | 245 | 422 | *572 | 683 | 772 | 864 | 952 | 1046 | 1136 | 1224 |
| 75 | 122 | 296 | 473 | 604 | 706 | 803 | 904 | 996 | 1091 | 1185 | 1274 |
| 80 | 156 | 343 | *512 | 629 | 729 | 834 | 941 | 1038 | 1133 | 1230 | 1320 |
| 85 | 191 | 385 | 541 | 648 | 753 | 866 | 977 | 1075 | 1173 | 1270 | 1362 |
| 90 | 226 | 419 | 563 | 667 | 777 | 897 | 1010 | 1112 | 1208 | 1307 | 1399 |
| 95 | 258 | 447 | 582 | 686 | 801 | 925 | 1040 | 1145 | 1241 | 1341 | 1433 |
| 100 | 287 | *472 | 600 | 704 | 825 | 951 | 1068 | 1175 | 1271 | 1372 | 1464 |
| 105 | 311 | 494 | 615 | 720 | 848 | 977 | 1095 | 1202 | 1298 | 1401 | 1493 |
| 110 | 333 | 512 | 628 | 737 | 869 | 1000 | 1119 | 1228 | 1324 | 1427 | 1517 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 115 | 354 | 529 | 641 | 754 | 890 | 1022 | 1141 | 1251 | 1347 | 1450 | 1541 |
| 120 | 373 | 543 | 653 | 771 | 910 | 1042 | 1161 | 1272 | 1370 | 1470 | 1562 |
| 125 | *390 | 555 | 664 | 786 | 929 | 1060 | 1179 | 1292 | 1390 | 1490 | 1580 |
| 130 | 406 | 566 | 674 | 801 | 946 | 1076 | 1196 | 1309 | 1407 | 1506 | 1596 |
| 135 | 420 | 575 | 685 | 815 | 961 | 1092 | 1212 | 1324 | 1424 | 1524 | 1612 |
| 140 | 433 | 584 | 696 | 828 | 974 | 1106 | 1226 | 1340 | 1439 | 1539 | 1625 |
| 145 | 445 | 591 | 707 | 841 | 987 | 1120 | 1239 | 1351 | 1452 | 1552 | 1637 |
| 150 | 455 | 598 | 716 | 853 | 999 | 1133 | 1250 | 1363 | 1463 | 1563 | 1647 |
| 155 | 465 | 605 | 725 | 863 | 1009 | 1144 | 1261 | 1374 | 1474 | 1573 | 1656 |
| 160 | 473 | 610 | 733 | 873 | 1019 | 1153 | 1271 | 1385 | 1482 | 1582 | 1663 |
| 165 | 481 | 616 | 740 | 882 | 1028 | 1162 | 1279 | 1394 | 1491 | 1590 | 1670 |
| 170 | 489 | 621 | 746 | 890 | 1037 | 1171 | 1287 | 1402 | 1498 | 1596 | 1676 |
| 175 | 495 | 625 | 753 | 897 | 1045 | 1178 | 1294 | 1410 | 1505 | 1601 | 1681 |
| 180 | 501 | 630 | 758 | 905 | 1052 | 1185 | 1301 | 1416 | 1510 | 1605 | 1685 |
| 185 | 507 | 634 | 763 | 911 | 1058 | 1191 | 1307 | 1421 | 1515 | 1608 | 1688 |
| 190 | 511 | 637 | 767 | 917 | 1063 | 1196 | 1312 | 1425 | 1519 | 1611 | 1690 |
| 195 | 516 | 640 | 772 | 921 | 1068 | 1201 | 1316 | 1429 | 1522 | 1613 | 1692 |
| 200 | 519 | 644 | 776 | 926 | 1072 | 1205 | 1319 | 1431 | 1524 | 1614 | 1694 |
| Maximum MAI | 3.1 | 4.7 | 6.4 | 8.2 | 10.3 | 12.4 | 14.5 | 16.4 | 18.0 | 19.9 | 22.2 |
| Age for Maximum MAI | 125 | 100 | 80 | 70 | 60 | 50 | 45 | 40 | 35 | 35 | 30 |

These volumes are from Xeno yield tables with no reductions or net downs.
The initial conditions for this table are:

| | |
|---|---|
| Number of natural stems | 12 000/ha Hemlock |
| Percent distribution of natural stems | 100% |
| Years of natural regeneration | 5 |
| No spacing | |

## Table h8b

**Yield Table Volumes Used in TFL 39 Management and Working Plan No. 8**

| Total Age | Site Index | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **12** | **15** | **18** | **21** | **24** | **27** | **30** | **33** | **36** | **39** | **42** |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 11 | 34 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 16 | 47 | 108 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 10 | 24 |
| 20 | 0 | 0 | 0 | 0 | 0 | 2 | 8 | 15 | 26 | 44 | 72 |
| 25 | 0 | 0 | 0 | 2 | 6 | 14 | 32 | 54 | 84 | 124 | 181 |
| 30 | 0 | 0 | 1 | 6 | 19 | 44 | 85 | 131 | 189 | 261 | 350 |
| 35 | 0 | 0 | 3 | 19 | 53 | 100 | 172 | 246 | 334 | 434 | 549 |
| 40 | 0 | 1 | 14 | 49 | 106 | 178 | 282 | 384 | 499 | 617 | 738 |
| 45 | 0 | 7 | 37 | 92 | 172 | 270 | 408 | 534 | 664 | 783 | 892 |
| 50 | 1 | 22 | 69 | 143 | 250 | 373 | 543 | 681 | 810 | *912 | *1006 |
| 55 | 4 | 43 | 106 | 201 | 334 | 480 | 670 | 805 | *918 | 1000 | 1078 |
| 60 | 14 | 68 | 147 | 265 | 423 | 584 | 780 | *901 | 998 | 1067 | 1140 |
| 65 | 29 | 95 | 192 | 332 | 510 | 675 | 868 | 976 | 1059 | 1128 | 1200 |
| 70 | 45 | 124 | 240 | 401 | 592 | 754 | *941 | 1039 | 1116 | 1185 | 1253 |
| 75 | 62 | 155 | 289 | 466 | 662 | 825 | 996 | 1092 | 1165 | 1234 | 1302 |
| 80 | 80 | 187 | 336 | 524 | 724 | *884 | 1035 | 1137 | 1212 | 1278 | 1349 |
| 85 | 99 | 220 | 380 | 577 | 783 | 936 | 1077 | 1174 | 1255 | 1318 | 1389 |
| 90 | 118 | 250 | 422 | 627 | 835 | 981 | 1108 | 1211 | 1293 | 1354 | 1425 |
| 95 | 137 | 279 | 461 | 673 | *882 | 1020 | 1138 | 1243 | 1325 | 1389 | 1458 |
| 100 | 155 | 306 | 499 | 715 | 921 | 1049 | 1166 | 1275 | 1357 | 1419 | 1487 |
| 105 | 172 | 333 | 535 | *753 | 956 | 1077 | 1197 | 1302 | 1384 | 1444 | 1515 |
| 110 | 188 | 359 | 568 | 786 | 985 | 1105 | 1211 | 1326 | 1408 | 1472 | 1541 |
| 115 | 203 | 383 | 599 | 818 | 1010 | 1131 | 1235 | 1350 | 1431 | 1497 | 1562 |
| 120 | 218 | 407 | 627 | 845 | 1036 | 1152 | 1252 | 1373 | 1455 | 1518 | 1581 |
| 125 | 233 | 430 | *654 | 870 | 1057 | 1172 | 1273 | 1394 | 1475 | 1536 | 1598 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 130 | 247 | 451 | 678 | 894 | 1072 | 1187 | 1293 | 1412 | 1494 | 1553 | 1613 |
| 135 | 261 | 471 | 701 | 914 | 1084 | 1204 | 1318 | 1428 | 1513 | 1568 | 1626 |
| 140 | 274 | 490 | 721 | 928 | 1094 | 1220 | 1338 | 1442 | 1528 | 1583 | 1639 |
| 145 | 286 | *508 | 739 | 942 | 1104 | 1234 | 1352 | 1457 | 1541 | 1595 | 1648 |
| 150 | 298 | 525 | 757 | 953 | 1114 | 1247 | 1365 | 1468 | 1552 | 1607 | 1658 |
| 155 | 309 | 541 | 773 | 963 | 1126 | 1259 | 1371 | 1479 | 1564 | 1618 | 1666 |
| 160 | 320 | 555 | 786 | 974 | 1136 | 1268 | 1382 | 1488 | 1576 | 1626 | 1674 |
| 165 | *330 | 569 | 798 | 987 | 1148 | 1275 | 1394 | 1498 | 1587 | 1635 | 1679 |
| 170 | 340 | 581 | 810 | 995 | 1157 | 1283 | 1400 | 1507 | 1596 | 1641 | 1684 |
| 175 | 349 | 592 | 821 | 1002 | 1160 | 1291 | 1405 | 1515 | 1602 | 1648 | 1689 |
| 180 | 358 | 603 | 831 | 1013 | 1170 | 1294 | 1411 | 1522 | 1607 | 1651 | 1693 |
| 185 | 366 | 613 | 840 | 1018 | 1176 | 1300 | 1416 | 1527 | 1610 | 1654 | 1696 |
| 190 | 373 | 622 | 849 | 1028 | 1185 | 1306 | 1423 | 1532 | 1613 | 1657 | 1698 |
| 195 | 380 | 631 | 857 | 1035 | 1192 | 1310 | 1430 | 1536 | 1616 | 1660 | 1700 |
| 200 | 380 | 631 | 857 | 1035 | 1192 | 1310 | 1430 | 1536 | 1617 | 1661 | 1701 |
| Maximum MAI | 2.0 | 3.5 | 5.2 | 7.2 | 9.3 | 11.1 | 13.4 | 15.0 | 16.7 | 18.2 | 20.1 |
| Age for Maximum MAI | 165 | 145 | 125 | 105 | 95 | 80 | 70 | 60 | 55 | 50 | 50 |

These volumes are from Xeno yield tables with no reductions or netdowns.
The initial conditions for this table are:

| | |
|---|---|
| Number of natural stems | 12 000/ha Hemlock |
| Percent distribution of natural stems | 100% |
| Years of natural regeneration | 5 |
| Spaced @ 15 years to 1200/ha | |

## Table f1a

**Yield Table Volumes Used in TFL 39 Management and Working Plan No. 8**

| Total Age | Site Index | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 | 39 | 42 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 7 |
| 20 | 0 | 0 | 0 | 0 | 0 | 1 | 5 | 10 | 18 | 28 | 44 |
| 25 | 0 | 0 | 0 | 1 | 4 | 11 | 22 | 38 | 58 | 86 | 118 |
| 30 | 0 | 0 | 1 | 4 | 15 | 36 | 63 | 91 | 130 | 179 | 242 |
| 35 | 0 | 0 | 3 | 16 | 44 | 78 | 121 | 166 | 226 | 308 | 412 |
| 40 | 0 | 1 | 12 | 40 | 81 | 129 | 188 | 256 | 348 | 458 | 595 |
| 45 | 0 | 5 | 31 | 68 | 122 | 184 | 262 | 361 | 474 | 616 | 788 |
| 50 | 0 | 16 | 52 | 99 | 164 | 243 | 348 | 466 | 607 | 779 | 984 |
| 55 | 1 | 30 | 73 | 129 | 208 | 308 | 429 | 574 | 741 | 942 | 1172 |
| 60 | 6 | 43 | 94 | 160 | 252 | 372 | 512 | 681 | 874 | 1100 | 1342 |
| 65 | 13 | 56 | 115 | 190 | 298 | 433 | 594 | 787 | 1006 | 1245 | 1490 |
| 70 | 22 | 69 | 135 | 220 | 343 | 494 | 674 | 891 | 1128 | 1375 | *1614 |
| 75 | 29 | 82 | 154 | 249 | 385 | 553 | 751 | 993 | 1240 | *1488 | 1714 |
| 80 | 36 | 94 | 173 | 278 | 426 | 612 | 826 | 1087 | 1343 | 1583 | 1794 |
| 85 | 43 | 105 | 190 | 307 | 465 | 667 | 899 | 1174 | *1434 | 1664 | 1854 |
| 90 | 49 | 116 | 208 | 333 | 503 | 720 | 970 | 1255 | 1512 | 1729 | 1899 |
| 95 | 55 | 127 | 224 | 358 | 540 | 771 | 1035 | *1329 | 1580 | 1782 | 1934 |
| 100 | 61 | 137 | 240 | 382 | 575 | 821 | 1097 | 1396 | 1638 | 1825 | 1963 |
| 105 | 66 | 146 | 255 | 405 | 609 | 869 | *1154 | 1457 | 1686 | 1863 | 1988 |
| 110 | 72 | 155 | 270 | 427 | 642 | 914 | 1208 | 1510 | 1727 | 1891 | 2009 |
| 115 | 76 | 164 | 285 | 448 | 673 | *959 | 1258 | 1558 | 1760 | 1915 | 2027 |
| 120 | 81 | 172 | 300 | 469 | *703 | 1000 | 1304 | 1598 | 1788 | 1936 | 2045 |
| 125 | 86 | 179 | *313 | *489 | 732 | 1038 | 1347 | 1634 | 1811 | 1953 | 2061 |
| 130 | 90 | *187 | 325 | 508 | 760 | 1075 | 1388 | 1665 | 1832 | 1969 | 2077 |
| 135 | 94 | 194 | 336 | 527 | 786 | 1111 | 1426 | 1692 | 1848 | 1984 | 2092 |
| 140 | 98 | 201 | 347 | 544 | 811 | 1143 | 1458 | 1717 | 1864 | 1999 | 2106 |
| 145 | 102 | 207 | 358 | 561 | 836 | 1175 | 1487 | 1739 | 1877 | 2011 | 2119 |
| 150 | *106 | 213 | 368 | 577 | 859 | 1203 | 1516 | 1758 | 1890 | 2024 | 2134 |
| 155 | 109 | 219 | 377 | 592 | 882 | 1230 | 1542 | 1775 | 1900 | 2036 | 2146 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 160 | 112 | 225 | 387 | 606 | 904 | 1256 | 1565 | 1790 | 1912 | 2048 | 2158 |
| 165 | 116 | 230 | 395 | 621 | 924 | 1279 | 1587 | 1804 | 1922 | 2057 | 2170 |
| 170 | 119 | 236 | 404 | 635 | 944 | 1302 | 1606 | 1814 | 1932 | 2068 | 2182 |
| 175 | 121 | 241 | 413 | 648 | 963 | 1322 | 1624 | 1826 | 1940 | 2077 | 2193 |
| 180 | 124 | 245 | 421 | 661 | 980 | 1342 | 1640 | 1836 | 1948 | 2086 | 2204 |
| 185 | 127 | 250 | 428 | 673 | 998 | 1361 | 1655 | 1844 | 1957 | 2094 | 2214 |
| 190 | 129 | 255 | 436 | 685 | 1014 | 1381 | 1669 | 1852 | 1964 | 2103 | 2224 |
| 195 | 132 | 259 | 443 | 697 | 1030 | 1399 | 1681 | 1861 | 1971 | 2111 | 2234 |
| 200 | 134 | 263 | 449 | 708 | 1045 | 1414 | 1692 | 1870 | 1978 | 2118 | 2245 |
| Maximum MAI | 0.7 | 1.4 | 2.5 | 3.9 | 5.9 | 8.3 | 11.0 | 14.0 | 16.9 | 19.8 | 23.1 |
| Age for Maximum MAI | 150 | 130 | 125 | 125 | 120 | 115 | 105 | 95 | 85 | 75 | 70 |

These volumes are from Xeno yield tables with no reductions or net downs.
The initial conditions for this table are:

| | |
|---|---|
| Number of planted stems | 1200/ha Douglas-fir |
| Number of natural stems | 500/ha Douglas-fir |
| Percent survival of planted stems | 85% |
| Percent distribution of natural stems | 60% |
| Regeneration delay for natural stems (negative = early) | 0 |
| Years of natural regeneration | 4 |

No spacing
Site index the same for planted and natural stems

## Table f1b

**Yield Table Volumes Used in TFL 39 Management and Working Plan No. 8**

| Total Age | Site Index | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **12** | **15** | **18** | **21** | **24** | **27** | **30** | **33** | **36** | **39** | **42** |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 7 |
| 20 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 10 | 19 | 32 | 44 |
| 25 | 0 | 0 | 0 | 1 | 3 | 9 | 20 | 37 | 61 | 94 | 120 |
| 30 | 0 | 0 | 0 | 3 | 12 | 32 | 61 | 93 | 137 | 195 | 241 |
| 35 | 0 | 0 | 2 | 12 | 40 | 74 | 120 | 171 | 238 | 326 | 410 |
| 40 | 0 | 1 | 9 | 36 | 78 | 127 | 190 | 262 | 363 | 483 | 590 |
| 45 | 0 | 5 | 27 | 64 | 120 | 184 | 265 | 372 | 495 | 645 | 776 |
| 50 | 0 | 18 | 47 | 96 | 165 | 245 | 354 | 483 | 631 | 806 | 959 |
| 55 | 2 | 35 | 69 | 128 | 210 | 312 | 441 | 595 | 766 | 959 | 1128 |
| 60 | 9 | 53 | 92 | 161 | 256 | 381 | 528 | 704 | 890 | 1097 | 1276 |
| 65 | 19 | 70 | 114 | 193 | 305 | 447 | 612 | 807 | 1010 | 1218 | 1404 |
| 70 | 31 | 88 | 136 | 224 | 355 | 511 | 694 | 905 | 1118 | *1325 | *1512 |
| 75 | 41 | 105 | 158 | 256 | 401 | 573 | 772 | 998 | 1216 | 1417 | 1603 |
| 80 | 52 | 123 | 179 | 287 | 445 | 633 | 846 | 1082 | *1301 | 1495 | 1678 |
| 85 | 62 | 139 | 198 | 320 | 487 | 690 | 915 | 1159 | 1375 | 1561 | 1738 |
| 90 | 72 | 155 | 217 | 349 | 528 | 745 | 981 | *1230 | 1439 | 1615 | 1785 |
| 95 | 82 | 170 | 235 | 376 | 566 | 796 | 1041 | 1292 | 1497 | 1658 | 1825 |
| 100 | 91 | 184 | 252 | 402 | 604 | 845 | *1096 | 1347 | 1545 | 1694 | 1858 |
| 105 | 100 | 197 | 269 | 427 | 640 | 891 | 1146 | 1397 | 1585 | 1723 | 1886 |
| 110 | 108 | 210 | 286 | 452 | 674 | *936 | 1193 | 1439 | 1621 | 1748 | 1911 |
| 115 | 116 | 223 | 303 | 475 | 707 | 977 | 1234 | 1476 | 1649 | 1770 | 1934 |
| 120 | 124 | 235 | 320 | 498 | *739 | 1015 | 1272 | 1510 | 1674 | 1792 | 1955 |
| 125 | 131 | 246 | 335 | *519 | 769 | 1050 | 1307 | 1540 | 1697 | 1811 | 1975 |
| 130 | 138 | 257 | *348 | 539 | 797 | 1083 | 1338 | 1566 | 1716 | 1829 | 1993 |
| 135 | 145 | 268 | 361 | 558 | 824 | 1113 | 1368 | 1591 | 1734 | 1845 | 2011 |
| 140 | 151 | *278 | 374 | 577 | 849 | 1141 | 1393 | 1611 | 1748 | 1859 | 2028 |
| 145 | 158 | 288 | 386 | 595 | 874 | 1167 | 1416 | 1629 | 1763 | 1874 | 2043 |
| 150 | 164 | 297 | 397 | 612 | 896 | 1189 | 1436 | 1644 | 1775 | 1889 | 2057 |
| 155 | *169 | 305 | 408 | 628 | 917 | 1211 | 1455 | 1660 | 1788 | 1902 | 2071 |
| 160 | 174 | 314 | 419 | 643 | 938 | 1232 | 1473 | 1672 | 1800 | 1913 | 2085 |
| 165 | 179 | 321 | 429 | 658 | 956 | 1252 | 1490 | 1686 | 1811 | 1925 | 2097 |
| 170 | 184 | 329 | 438 | 671 | 974 | 1272 | 1504 | 1697 | 1822 | 1935 | 2109 |
| 175 | 189 | 336 | 447 | 684 | 990 | 1288 | 1516 | 1707 | 1833 | 1946 | 2121 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 180 | 193 | 342 | 456 | 697 | 1005 | 1304 | 1529 | 1716 | 1842 | 1957 | 2132 |
| 185 | 197 | 348 | 464 | 709 | 1020 | 1317 | 1540 | 1724 | 1849 | 1967 | 2143 |
| 190 | 201 | 354 | 472 | 720 | 1034 | 1330 | 1550 | 1731 | 1856 | 1977 | 2153 |
| 195 | 204 | 360 | 480 | 731 | 1046 | 1343 | 1559 | 1736 | 1863 | 1986 | 2164 |
| 200 | 208 | 365 | 487 | 741 | 1059 | 1355 | 1566 | 1742 | 1868 | 1994 | 2173 |
| Maximum MAI | 1.1 | 2.0 | 2.7 | 4.2 | 6.2 | 8.5 | 11.0 | 13.7 | 16.3 | 18.9 | 21.6 |
| Age for Maximum MAI | 155 | 140 | 130 | 125 | 120 | 110 | 100 | 90 | 80 | 70 | 70 |

These volumes are from Xeno yield tables with no reductions or net downs.
The initial conditions for this table are:

| | |
|---|---|
| Number of planted stems | 1200/ha Douglas-fir |
| Number of natural stems | 500/ha Hemlock |
| Percent survival of planted stems | 85% |
| Percent distribution of natural stems | 60% |
| Regeneration delay for natural stems (negative = early) | 0 |
| Years of natural regeneration | 4 |

No spacing
Site index for natural stems is 3 m. less than planted stems

## Table f2a

**Yield Table Volumes Used in TFL 39 Management and Working Plan No. 8**

| Total Age | Site Index | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **12** | **15** | **18** | **21** | **24** | **27** | **30** | **33** | **36** | **39** | **42** |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 4 | 9 |
| 20 | 0 | 0 | 0 | 0 | 0 | 2 | 5 | 12 | 21 | 35 | 53 |
| 25 | 0 | 0 | 0 | 1 | 5 | 12 | 26 | 44 | 67 | 96 | 135 |
| 30 | 0 | 0 | 1 | 5 | 17 | 38 | 65 | 98 | 139 | 191 | 262 |
| 35 | 0 | 0 | 3 | 16 | 42 | 79 | 121 | 172 | 237 | 320 | 419 |
| 40 | 0 | 1 | 11 | 37 | 78 | 130 | 188 | 262 | 348 | 462 | 601 |
| 45 | 0 | 4 | 27 | 63 | 118 | 185 | 263 | 355 | 469 | 621 | 796 |
| 50 | 0 | 13 | 46 | 93 | 161 | 244 | 338 | 454 | 600 | 786 | 990 |
| 55 | 1 | 24 | 66 | 124 | 205 | 301 | 415 | 559 | 734 | 949 | 1175 |
| 60 | 4 | 36 | 87 | 154 | 248 | 357 | 494 | 665 | 866 | 1105 | 1343 |
| 65 | 10 | 49 | 108 | 184 | 289 | 416 | 575 | 770 | 994 | 1249 | 1488 |
| 70 | 16 | 61 | 129 | 214 | 328 | 474 | 654 | 870 | 1115 | 1378 | *1608 |
| 75 | 23 | 74 | 148 | 242 | 368 | 531 | 731 | 967 | 1225 | *1489 | 1702 |
| 80 | 29 | 86 | 167 | 268 | 407 | 587 | 806 | 1059 | 1326 | 1581 | 1773 |
| 85 | 35 | 98 | 184 | 293 | 445 | 641 | 878 | 1144 | *1415 | 1656 | 1826 |
| 90 | 41 | 109 | 202 | 317 | 482 | 694 | 945 | 1224 | 1492 | 1716 | 1864 |
| 95 | 47 | 119 | 218 | 340 | 518 | 745 | 1010 | *1297 | 1557 | 1762 | 1893 |
| 100 | 53 | 130 | 233 | 363 | 553 | 793 | 1071 | 1363 | 1612 | 1797 | 1916 |
| 105 | 58 | 139 | 247 | 386 | 586 | 839 | *1128 | 1422 | 1656 | 1823 | 1936 |
| 110 | 63 | 148 | 260 | 408 | 618 | 883 | 1181 | 1474 | 1692 | 1846 | 1954 |
| 115 | 68 | 157 | 273 | 428 | 649 | 925 | 1229 | 1519 | 1725 | 1865 | 1970 |
| 120 | 73 | 165 | *285 | 447 | *679 | *965 | 1275 | 1560 | 1752 | 1880 | 1985 |
| 125 | 78 | 172 | 297 | *467 | 707 | 1004 | 1318 | 1595 | 1774 | 1894 | 1999 |
| 130 | 82 | 180 | 308 | 485 | 734 | 1039 | 1357 | 1624 | 1792 | 1905 | 2012 |
| 135 | 86 | *187 | 319 | 503 | 759 | 1073 | 1391 | 1651 | 1808 | 1917 | 2024 |
| 140 | 90 | 194 | 329 | 520 | 783 | 1106 | 1423 | 1675 | 1822 | 1927 | 2036 |
| 145 | 94 | 200 | 339 | 536 | 807 | 1136 | 1450 | 1693 | 1834 | 1938 | 2047 |
| 150 | 98 | 206 | 348 | 551 | 831 | 1165 | 1477 | 1710 | 1845 | 1947 | 2059 |
| 155 | 101 | 212 | 358 | 566 | 854 | 1193 | 1502 | 1726 | 1856 | 1957 | 2070 |
| 160 | *105 | 218 | 367 | 581 | 875 | 1218 | 1525 | 1738 | 1866 | 1967 | 2082 |
| 165 | 108 | 223 | 376 | 595 | 895 | 1242 | 1546 | 1748 | 1875 | 1977 | 2092 |
| 170 | 111 | 228 | 384 | 609 | 915 | 1266 | 1566 | 1758 | 1882 | 1986 | 2103 |
| 175 | 114 | 233 | 392 | 622 | 934 | 1287 | 1584 | 1769 | 1889 | 1992 | 2113 |
| 180 | 117 | 238 | 400 | 635 | 951 | 1307 | 1598 | 1778 | 1895 | 2001 | 2123 |
| 185 | 120 | 242 | 407 | 647 | 969 | 1326 | 1612 | 1786 | 1901 | 2008 | 2133 |
| 190 | 122 | 246 | 415 | 659 | 986 | 1343 | 1624 | 1794 | 1906 | 2015 | 2143 |
| 195 | 125 | 250 | 422 | 670 | 1001 | 1359 | 1634 | 1801 | 1911 | 2022 | 2153 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 200 | 127 | 254 | 428 | 681 | 1017 | 1375 | 1646 | 1806 | 1917 | 2029 | 2163 |
| Maximum MAI | 0.7 | 1.4 | 2.4 | 3.7 | 5.7 | 8.0 | 10.7 | 13.6 | 16.7 | 19.9 | 23.0 |
| Age for Maximum MAI | 160 | 135 | 120 | 125 | 120 | 120 | 105 | 95 | 85 | 75 | 70 |

These volumes are from Xeno yield tables with no reductions or net downs.
The initial conditions for this table are:

| | |
|---|---|
| Number of planted stems | 1200/ha Douglas-fir |
| Number of natural stems | 1200/ha Douglas-fir |
| Percent survival of planted stems | 90% |
| Percent distribution of natural stems | 75% |
| Regeneration delay for natural stems (negative = early) | 0 |
| Years of natural regeneration | 4 |

No spacing
Site index the same for planted and natural stems

## Table f2b

**Yield Table Volumes Used in TFL 39 Management and Working Plan No. 8**

| Total Age | Site Index | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **12** | **15** | **18** | **21** | **24** | **27** | **30** | **33** | **36** | **39** | **42** |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 7 | 10 |
| 20 | 0 | 0 | 0 | 0 | 0 | 1 | 5 | 13 | 26 | 45 | 58 |
| 25 | 0 | 0 | 0 | 1 | 3 | 11 | 25 | 47 | 77 | 118 | 143 |
| 30 | 0 | 0 | 0 | 3 | 13 | 35 | 66 | 109 | 162 | 230 | 273 |
| 35 | 0 | 0 | 2 | 11 | 38 | 80 | 129 | 193 | 271 | 372 | 425 |
| 40 | 0 | 1 | 7 | 31 | 76 | 136 | 204 | 292 | 390 | 521 | 594 |
| 45 | 0 | 6 | 20 | 60 | 121 | 197 | 287 | 392 | 515 | 676 | 776 |
| 50 | 0 | 19 | 40 | 93 | 170 | 263 | 369 | 496 | 643 | 836 | 949 |
| 55 | 3 | 37 | 63 | 128 | 219 | 327 | 451 | 601 | 774 | 977 | 1099 |
| 60 | 11 | 58 | 87 | 164 | 270 | 391 | 533 | 707 | 893 | 1096 | 1224 |
| 65 | 22 | 79 | 111 | 199 | 318 | 453 | 615 | 807 | 1000 | *1198 | *1333 |
| 70 | 34 | 101 | 136 | 235 | 364 | 512 | 697 | 900 | 1093 | 1283 | 1425 |
| 75 | 48 | 124 | 160 | 269 | 408 | 572 | 774 | 984 | *1174 | 1355 | 1499 |
| 80 | 61 | 146 | 184 | 301 | 449 | 632 | 847 | *1059 | 1245 | 1414 | 1561 |
| 85 | 75 | 167 | 206 | 330 | 490 | 689 | 913 | 1125 | 1306 | 1458 | 1611 |
| 90 | 88 | 187 | 228 | 358 | 530 | 743 | 974 | 1184 | 1357 | 1498 | 1654 |
| 95 | 102 | 206 | 248 | 385 | 570 | 796 | *1030 | 1235 | 1400 | 1531 | 1691 |
| 100 | 115 | 223 | 266 | 410 | 609 | 843 | 1079 | 1281 | 1436 | 1560 | 1723 |
| 105 | 126 | 240 | 283 | 434 | 645 | *888 | 1125 | 1321 | 1466 | 1586 | 1751 |
| 110 | 137 | 256 | 300 | 457 | 680 | 928 | 1164 | 1354 | 1494 | 1608 | 1777 |
| 115 | 148 | 271 | 316 | 481 | 715 | 968 | 1200 | 1384 | 1517 | 1628 | 1800 |
| 120 | 157 | 286 | 331 | 504 | *747 | 1002 | 1232 | 1412 | 1537 | 1646 | 1822 |
| 125 | 167 | 300 | 345 | *525 | 776 | 1035 | 1261 | 1432 | 1553 | 1664 | 1842 |
| 130 | 176 | 313 | *359 | 546 | 804 | 1064 | 1286 | 1450 | 1569 | 1679 | 1861 |
| 135 | 185 | 325 | 372 | 566 | 830 | 1090 | 1310 | 1469 | 1584 | 1693 | 1879 |
| 140 | 193 | *338 | 385 | 585 | 855 | 1115 | 1330 | 1487 | 1600 | 1708 | 1895 |
| 145 | 201 | 349 | 396 | 604 | 879 | 1138 | 1349 | 1502 | 1615 | 1722 | 1910 |
| 150 | 209 | 360 | 407 | 621 | 902 | 1158 | 1365 | 1514 | 1629 | 1735 | 1924 |
| 155 | *216 | 370 | 418 | 637 | 923 | 1177 | 1380 | 1526 | 1640 | 1746 | 1938 |
| 160 | 222 | 380 | 427 | 652 | 941 | 1194 | 1394 | 1536 | 1648 | 1758 | 1951 |
| 165 | 229 | 389 | 437 | 667 | 959 | 1210 | 1407 | 1544 | 1658 | 1768 | 1963 |
| 170 | 235 | 397 | 447 | 681 | 973 | 1225 | 1420 | 1554 | 1666 | 1777 | 1975 |
| 175 | 241 | 405 | 455 | 694 | 987 | 1239 | 1429 | 1561 | 1674 | 1787 | 1986 |
| 180 | 246 | 412 | 464 | 707 | 1000 | 1250 | 1437 | 1568 | 1682 | 1797 | 1998 |
| 185 | 251 | 419 | 472 | 719 | 1013 | 1260 | 1445 | 1573 | 1690 | 1804 | 2008 |
| 190 | 256 | 425 | 480 | 730 | 1026 | 1269 | 1451 | 1579 | 1696 | 1812 | 2018 |
| 195 | 261 | 431 | 487 | 740 | 1037 | 1277 | 1457 | 1584 | 1703 | 1820 | 2028 |
| 200 | 265 | 437 | 494 | 750 | 1047 | 1285 | 1460 | 1589 | 1710 | 1826 | 2037 |
| Maximum MAI | 1.4 | 2.4 | 2.8 | 4.2 | 6.2 | 8.5 | 10.8 | 13.2 | 15.7 | 18.4 | 20.5 |
| Age for | 155 | 140 | 130 | 125 | 120 | 105 | 95 | 80 | 75 | 65 | 65 |

| Maximum MAI | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|

These volumes are from Xeno yield tables with no reductions or net downs.
The initial conditions for this table are:

| | |
|---|---|
| Number of planted stems | 1200/ha Douglas-fir |
| Number of natural stems | 1200/ha Hemlock |
| Percent survival of planted stems | 90% |
| Percent distribution of natural stems | 75% |
| Regeneration delay for natural stems (negative = early) | 0 |
| Years of natural regeneration | 4 |

No spacing
Site index for natural stems is 3 m. less than planted stems

## Table f3a

**Yield Table Volumes Used in TFL 39 Management and Working Plan No. 8**

| Total Age | Site Index | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **12** | **15** | **18** | **21** | **24** | **27** | **30** | **33** | **36** | **39** | **42** |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 5 | 11 | 22 |
| 20 | 0 | 0 | 0 | 0 | 1 | 3 | 9 | 20 | 36 | 59 | 90 |
| 25 | 0 | 0 | 0 | 2 | 8 | 21 | 41 | 67 | 98 | 142 | 197 |
| 30 | 0 | 0 | 2 | 8 | 25 | 52 | 88 | 130 | 181 | 247 | 330 |
| 35 | 0 | 1 | 5 | 21 | 52 | 96 | 149 | 210 | 280 | 373 | 490 |
| 40 | 0 | 2 | 13 | 40 | 88 | 149 | 217 | 297 | 391 | 514 | 668 |
| 45 | 0 | 5 | 26 | 65 | 130 | 205 | 289 | 388 | 509 | 663 | 856 |
| 50 | 0 | 11 | 42 | 94 | 174 | 262 | 361 | 482 | 631 | 819 | 1041 |
| 55 | 1 | 20 | 60 | 126 | 218 | 318 | 433 | 577 | 756 | 973 | 1212 |
| 60 | 3 | 30 | 80 | 157 | 259 | 372 | 505 | 674 | 879 | 1117 | 1360 |
| 65 | 7 | 40 | 101 | 187 | 298 | 425 | 577 | 770 | 994 | 1247 | *1483 |
| 70 | 11 | 51 | 122 | 216 | 336 | 478 | 648 | 865 | 1102 | *1359 | 1577 |
| 75 | 16 | 63 | 142 | 243 | 373 | 529 | 720 | 955 | 1198 | 1454 | 1648 |
| 80 | 21 | 75 | 161 | 268 | 408 | 578 | 789 | 1038 | 1283 | 1529 | 1698 |
| 85 | 25 | 87 | 179 | 292 | 442 | 627 | 856 | 1116 | *1365 | 1586 | 1736 |
| 90 | 30 | 98 | 196 | 315 | 474 | 675 | 918 | *1188 | 1427 | 1629 | 1762 |
| 95 | 35 | 109 | 212 | 336 | 505 | 722 | 978 | 1252 | 1482 | 1660 | 1781 |
| 100 | 40 | 120 | 227 | 357 | 536 | 767 | *1033 | 1307 | 1527 | 1685 | 1798 |
| 105 | 45 | 130 | 241 | 377 | 566 | 810 | 1084 | 1358 | 1558 | 1705 | 1812 |
| 110 | 50 | 139 | 254 | 396 | *594 | 851 | 1131 | 1403 | 1586 | 1722 | 1826 |
| 115 | 54 | 148 | 267 | *415 | 621 | *891 | 1176 | 1440 | 1607 | 1738 | 1839 |
| 120 | 59 | 157 | *279 | 432 | 647 | 928 | 1217 | 1474 | 1620 | 1752 | 1852 |
| 125 | 63 | 165 | 290 | 450 | 673 | 963 | 1254 | 1502 | 1633 | 1764 | 1865 |
| 130 | 68 | 172 | 301 | 465 | 698 | 995 | 1288 | 1526 | 1648 | 1776 | 1879 |
| 135 | 72 | 180 | 311 | 481 | 722 | 1026 | 1320 | 1547 | 1659 | 1786 | 1892 |
| 140 | 76 | *186 | 321 | 496 | 746 | 1056 | 1349 | 1567 | 1670 | 1796 | 1904 |
| 145 | 80 | 193 | 330 | 511 | 768 | 1083 | 1375 | 1583 | 1680 | 1807 | 1917 |
| 150 | 83 | 199 | 339 | 525 | 788 | 1109 | 1398 | 1595 | 1688 | 1818 | 1929 |
| 155 | 87 | 205 | 348 | 539 | 808 | 1133 | 1418 | 1607 | 1694 | 1827 | 1941 |
| 160 | 90 | 211 | 356 | 552 | 828 | 1156 | 1437 | 1615 | 1702 | 1836 | 1954 |
| 165 | 94 | 216 | 364 | 564 | 846 | 1177 | 1454 | 1622 | 1712 | 1845 | 1966 |
| 170 | 97 | 221 | 372 | 576 | 863 | 1197 | 1468 | 1628 | 1720 | 1854 | 1978 |
| 175 | 100 | 226 | 380 | 587 | 881 | 1216 | 1482 | 1636 | 1726 | 1864 | 1989 |
| 180 | *103 | 231 | 387 | 599 | 897 | 1235 | 1497 | 1644 | 1729 | 1874 | 2000 |
| 185 | 106 | 235 | 394 | 610 | 913 | 1254 | 1508 | 1651 | 1733 | 1882 | 2010 |
| 190 | 109 | 239 | 400 | 621 | 929 | 1270 | 1520 | 1657 | 1741 | 1891 | 2021 |
| 195 | 111 | 243 | 407 | 631 | 943 | 1285 | 1531 | 1662 | 1746 | 1897 | 2031 |
| 200 | 114 | 247 | 413 | 642 | 958 | 1300 | 1540 | 1668 | 1754 | 1906 | 2040 |
| Maximum MAI | 0.6 | 1.3 | 2.3 | 3.6 | 5.4 | 7.7 | 10.3 | 13.2 | 16.1 | 19.4 | 22.8 |
| Age for Maximum MAI | 180 | 140 | 120 | 115 | 110 | 115 | 100 | 90 | 85 | 70 | 65 |

These volumes are from Xeno yield tables with no reductions or net downs.

The initial conditions for this table are:

| | |
|---|---|
| Number of planted stems | 1200/ha Douglas-fir |
| Number of natural stems | 3000/ha Douglas-fir |
| Percent survival of planted stems | 90% |
| Percent distribution of natural stems | 90% |
| Regeneration delay for natural stems ( negative = early) | –1 |
| Years of natural regeneration | 5 |

No spacing
Site index the same for planted and natural stems

## Table f3b

**Yield Table Volumes Used in TFL 39 Management and Working Plan No. 8**

| Total Age | Site Index | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **12** | **15** | **18** | **21** | **24** | **27** | **30** | **33** | **36** | **39** | **42** |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 8 | 20 | 25 |
| 20 | 0 | 0 | 0 | 0 | 0 | 3 | 11 | 27 | 52 | 89 | 102 |
| 25 | 0 | 0 | 0 | 1 | 6 | 20 | 45 | 80 | 132 | 198 | 217 |
| 30 | 0 | 0 | 1 | 5 | 20 | 52 | 101 | 160 | 237 | 331 | 354 |
| 35 | 0 | 1 | 2 | 14 | 49 | 104 | 176 | 258 | 357 | 471 | 500 |
| 40 | 0 | 3 | 6 | 34 | 92 | 169 | 260 | 360 | 479 | 614 | 650 |
| 45 | 0 | 11 | 17 | 64 | 143 | 238 | 345 | 462 | 598 | 758 | 798 |
| 50 | 1 | 27 | 36 | 101 | 198 | 308 | 427 | 561 | 716 | 880 | 930 |
| 55 | 6 | 50 | 60 | 141 | 254 | 375 | 507 | 655 | 819 | *979 | *1038 |
| 60 | 17 | 75 | 86 | 183 | 308 | 439 | 581 | 740 | *911 | 1047 | 1116 |
| 65 | 31 | 102 | 115 | 224 | 359 | 498 | 650 | 818 | 984 | 1101 | 1187 |
| 70 | 47 | 131 | 144 | 265 | 407 | 553 | 715 | 891 | 1045 | 1140 | 1239 |
| 75 | 63 | 161 | 174 | 302 | 449 | 604 | 775 | *956 | 1093 | 1169 | 1279 |
| 80 | 82 | 191 | 202 | 335 | 489 | 653 | 831 | 1010 | 1131 | 1190 | 1305 |
| 85 | 100 | 219 | 229 | 366 | 527 | 699 | *885 | 1058 | 1161 | 1215 | 1336 |
| 90 | 119 | 244 | 253 | 396 | 563 | *742 | 931 | 1093 | 1188 | 1239 | 1365 |
| 95 | 138 | 267 | 275 | 423 | 598 | 781 | 972 | 1125 | 1211 | 1262 | 1391 |
| 100 | 155 | 289 | 296 | 448 | *630 | 820 | 1009 | 1148 | 1229 | 1278 | 1420 |
| 105 | 170 | 310 | 315 | 473 | 660 | 857 | 1037 | 1165 | 1240 | 1288 | 1442 |
| 110 | 185 | 329 | 333 | *496 | 688 | 894 | 1062 | 1182 | 1251 | 1310 | 1457 |
| 115 | 199 | 347 | 350 | 518 | 713 | 923 | 1085 | 1197 | 1264 | 1332 | 1479 |
| 120 | 212 | 365 | *366 | 539 | 739 | 951 | 1104 | 1209 | 1275 | 1343 | 1497 |
| 125 | 225 | *381 | 381 | 559 | 763 | 976 | 1119 | 1218 | 1285 | 1355 | 1515 |
| 130 | 237 | 396 | 395 | 578 | 786 | 997 | 1134 | 1225 | 1294 | 1370 | 1536 |
| 135 | 249 | 410 | 408 | 595 | 809 | 1015 | 1145 | 1237 | 1301 | 1381 | 1552 |
| 140 | 260 | 424 | 421 | 612 | 828 | 1033 | 1153 | 1247 | 1310 | 1392 | 1568 |
| 145 | 270 | 437 | 433 | 627 | 847 | 1048 | 1161 | 1255 | 1320 | 1402 | 1585 |
| 150 | *280 | 449 | 445 | 640 | 864 | 1061 | 1167 | 1263 | 1327 | 1410 | 1600 |
| 155 | 289 | 460 | 456 | 653 | 879 | 1071 | 1173 | 1267 | 1338 | 1417 | 1612 |
| 160 | 297 | 471 | 466 | 664 | 893 | 1080 | 1179 | 1273 | 1346 | 1422 | 1623 |
| 165 | 305 | 481 | 475 | 674 | 906 | 1086 | 1184 | 1277 | 1355 | 1433 | 1638 |
| 170 | 313 | 490 | 484 | 685 | 916 | 1090 | 1188 | 1283 | 1361 | 1443 | 1648 |
| 175 | 320 | 499 | 492 | 695 | 926 | 1094 | 1191 | 1289 | 1366 | 1450 | 1659 |
| 180 | 326 | 507 | 501 | 704 | 934 | 1097 | 1194 | 1297 | 1372 | 1460 | 1670 |
| 185 | 332 | 515 | 508 | 713 | 942 | 1100 | 1196 | 1301 | 1375 | 1467 | 1677 |
| 190 | 338 | 522 | 515 | 722 | 949 | 1102 | 1198 | 1305 | 1379 | 1476 | 1683 |
| 195 | 343 | 528 | 521 | 730 | 954 | 1104 | 1199 | 1308 | 1384 | 1480 | 1693 |
| 200 | 348 | 535 | 527 | 737 | 959 | 1106 | 1200 | 1310 | 1386 | 1489 | 1700 |
| Maximum MAI | 1.9 | 3.0 | 3.0 | 4.5 | 6.3 | 8.2 | 10.4 | 12.7 | 15.2 | 17.8 | 18.9 |
| Age for Maximum MAI | 150 | 125 | 120 | 110 | 100 | 90 | 85 | 75 | 60 | 55 | 55 |

These volumes are from Xeno yield tables with no reductions or net downs.

The initial conditions for this table are:

| | |
|---|---|
| Number of planted stems | 1200/ha Douglas-fir |

| | |
|---|---|
| Number of natural stems | 3000/ha Hemlock |
| Percent survival of planted stems | 90% |
| Percent distribution of natural stems | 90% |
| Regeneration delay for natural stems (negative = early) | –1 |
| Years of natural regeneration | 5 |

No spacing
Site index for natural stems is 3 m. less than planted stems

## Table f4

**Yield Table Volumes Used in TFL 39 Management and Working Plan No. 8**

| Total Age | Site Index | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 | 39 | 42 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 4 |
| 20 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 5 | 9 | 15 | 23 |
| 25 | 0 | 0 | 0 | 1 | 2 | 6 | 11 | 19 | 30 | 45 | 64 |
| 30 | 0 | 0 | 1 | 2 | 8 | 18 | 32 | 49 | 71 | 99 | 135 |
| 35 | 0 | 0 | 2 | 8 | 22 | 41 | 64 | 93 | 129 | 174 | 230 |
| 40 | 0 | 1 | 7 | 21 | 43 | 70 | 105 | 147 | 199 | 263 | 341 |
| 45 | 0 | 3 | 16 | 37 | 66 | 104 | 151 | 209 | 279 | 363 | 463 |
| 50 | 0 | 8 | 28 | 54 | 92 | 141 | 202 | 276 | 364 | 468 | 591 |
| 55 | 1 | 16 | 39 | 72 | 120 | 180 | 256 | 346 | 452 | 576 | 718 |
| 60 | 3 | 23 | 52 | 91 | 148 | 221 | 310 | 417 | 542 | 683 | 841 |
| 65 | 7 | 30 | 64 | 110 | 177 | 261 | 365 | 488 | 630 | 787 | 957 |
| 70 | 11 | 37 | 76 | 129 | 205 | 301 | 420 | 557 | 715 | 886 | 1066 |
| 75 | 15 | 45 | 88 | 148 | 233 | 341 | 474 | 625 | 796 | 979 | 1168 |
| 80 | 18 | 51 | 100 | 167 | 261 | 380 | 525 | 691 | 874 | 1067 | 1263 |
| 85 | 22 | 58 | 111 | 185 | 288 | 418 | 576 | 754 | 946 | 1147 | 1351 |
| 90 | 26 | 65 | 123 | 202 | 314 | 455 | 625 | 813 | 1014 | 1224 | *1434 |
| 95 | 29 | 71 | 133 | 219 | 339 | 491 | 672 | 868 | 1078 | *1295 | 1512 |
| 100 | 32 | 77 | 144 | 236 | 364 | 526 | 717 | 921 | *1137 | 1361 | 1584 |
| 105 | 35 | 83 | 154 | 252 | 387 | 559 | 760 | 971 | 1193 | 1424 | 1653 |
| 110 | 38 | 88 | 164 | 267 | 410 | 591 | 800 | *1018 | 1245 | 1481 | 1718 |
| 115 | 41 | 94 | 173 | 282 | 432 | 622 | 839 | 1062 | 1295 | 1535 | 1780 |
| 120 | 43 | 99 | 182 | 296 | 454 | 650 | *876 | 1102 | 1342 | 1586 | 1838 |
| 125 | 46 | 104 | 190 | 310 | 474 | *678 | 910 | 1142 | 1388 | 1635 | 1893 |
| 130 | 48 | 109 | 199 | 323 | 494 | 705 | 943 | 1179 | 1429 | 1681 | 1946 |
| 135 | 51 | 113 | *207 | *335 | *513 | 730 | 974 | 1214 | 1469 | 1725 | 1995 |
| 140 | 53 | 118 | 214 | 348 | 531 | 755 | 1004 | 1248 | 1507 | 1766 | 2042 |
| 145 | 55 | *122 | 222 | 359 | 548 | 778 | 1031 | 1279 | 1543 | 1807 | 2087 |
| 150 | 57 | 126 | 229 | 371 | 565 | 801 | 1058 | 1308 | 1577 | 1845 | 2130 |
| 155 | 59 | 130 | 236 | 382 | 581 | 822 | 1082 | 1336 | 1608 | 1881 | 2170 |
| 160 | *61 | 134 | 242 | 392 | 596 | 842 | 1106 | 1364 | 1638 | 1917 | 2209 |
| 165 | 63 | 137 | 249 | 402 | 611 | 862 | 1128 | 1391 | 1667 | 1951 | 2246 |
| 170 | 65 | 141 | 255 | 412 | 625 | 881 | 1149 | 1415 | 1696 | 1983 | 2281 |
| 175 | 67 | 144 | 260 | 422 | 639 | 898 | 1169 | 1439 | 1724 | 2014 | 2315 |
| 180 | 68 | 148 | 266 | 431 | 653 | 916 | 1188 | 1462 | 1749 | 2044 | 2348 |
| 185 | 70 | 151 | 272 | 439 | 665 | 932 | 1208 | 1483 | 1773 | 2072 | 2379 |
| 190 | 71 | 154 | 277 | 448 | 677 | 947 | 1225 | 1506 | 1797 | 2098 | 2409 |
| 195 | 73 | 156 | 282 | 456 | 689 | 962 | 1243 | 1527 | 1819 | 2124 | 2438 |
| 200 | 74 | 159 | 287 | 463 | 700 | 977 | 1260 | 1546 | 1841 | 2150 | 2465 |
| Maximum MAI | 0.4 | 0.8 | 1.5 | 2.5 | 3.8 | 5.4 | 7.3 | 9.3 | 11.4 | 13.6 | 15.9 |
| Age for Maximum MAI | 160 | 145 | 135 | 135 | 135 | 125 | 120 | 110 | 100 | 95 | 90 |

These volumes are from Xeno yield tables with no reductions or net downs.

The initial conditions for this table are:

| | |
|---|---|
| Number of natural stems | 600/ha Douglas-fir |
| Percent distribution of natural stems | 70% |
| Years of natural regeneration | 5 |

No spacing

## Table f5

**Yield Table Volumes Used in TFL 39 Management and Working Plan No. 8**

| Total Age | Site Index | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **12** | **15** | **18** | **21** | **24** | **27** | **30** | **33** | **36** | **39** | **42** |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 5 | 9 |
| 20 | 0 | 0 | 0 | 0 | 0 | 2 | 6 | 11 | 19 | 31 | 47 |
| 25 | 0 | 0 | 0 | 1 | 5 | 12 | 23 | 39 | 60 | 87 | 124 |
| 30 | 0 | 0 | 1 | 5 | 16 | 35 | 60 | 91 | 130 | 179 | 240 |
| 35 | 0 | 0 | 4 | 16 | 41 | 74 | 115 | 163 | 223 | 294 | 383 |
| 40 | 0 | 1 | 12 | 37 | 76 | 123 | 180 | 246 | 327 | 423 | 538 |
| 45 | 0 | 5 | 28 | 64 | 116 | 177 | 250 | 334 | 437 | 557 | 698 |
| 50 | 0 | 14 | 47 | 93 | 157 | 233 | 322 | 424 | 550 | 694 | 858 |
| 55 | 2 | 26 | 67 | 123 | 199 | 288 | 393 | 514 | 662 | 829 | 1013 |
| 60 | 6 | 38 | 87 | 153 | 240 | 343 | 464 | 604 | 773 | 960 | 1158 |
| 65 | 12 | 51 | 107 | 182 | 280 | 395 | 534 | 693 | 879 | 1084 | 1292 |
| 70 | 18 | 63 | 127 | 209 | 319 | 447 | 602 | 779 | 982 | 1198 | 1414 |
| 75 | 25 | 75 | 146 | 236 | 356 | 498 | 668 | 862 | 1078 | 1303 | *1523 |
| 80 | 31 | 86 | 164 | 261 | 391 | 547 | 731 | 941 | 1169 | *1399 | 1623 |
| 85 | 37 | 98 | 181 | 286 | 426 | 593 | 793 | 1015 | 1253 | 1487 | 1715 |
| 90 | 43 | 108 | 197 | 309 | 460 | 638 | 852 | 1085 | *1330 | 1566 | 1799 |
| 95 | 49 | 118 | 212 | 331 | 492 | 683 | 908 | 1152 | 1401 | 1640 | 1878 |
| 100 | 54 | 128 | 227 | 352 | 522 | 725 | 961 | *1213 | 1466 | 1708 | 1951 |
| 105 | 59 | 137 | 240 | 372 | 552 | 764 | *1012 | 1270 | 1527 | 1772 | 2020 |
| 110 | 64 | 145 | 253 | 392 | 580 | *802 | 1059 | 1323 | 1584 | 1832 | 2084 |
| 115 | 69 | 153 | 266 | 411 | *607 | 838 | 1103 | 1372 | 1636 | 1888 | 2145 |
| 120 | 74 | 161 | *277 | *429 | 634 | 873 | 1144 | 1418 | 1683 | 1940 | 2202 |
| 125 | 78 | 169 | 289 | 446 | 659 | 907 | 1184 | 1461 | 1728 | 1989 | 2257 |
| 130 | 82 | *176 | 300 | 462 | 683 | 939 | 1222 | 1501 | 1770 | 2036 | 2309 |
| 135 | 86 | 182 | 310 | 478 | 706 | 970 | 1256 | 1538 | 1810 | 2079 | 2358 |
| 140 | 90 | 189 | 320 | 493 | 728 | 998 | 1289 | 1573 | 1848 | 2121 | 2404 |
| 145 | 93 | 195 | 329 | 508 | 748 | 1025 | 1320 | 1607 | 1885 | 2159 | 2446 |
| 150 | 97 | 200 | 338 | 521 | 769 | 1052 | 1350 | 1637 | 1918 | 2197 | 2487 |
| 155 | *100 | 206 | 347 | 535 | 788 | 1077 | 1378 | 1666 | 1952 | 2234 | 2527 |
| 160 | 103 | 211 | 355 | 547 | 807 | 1100 | 1404 | 1693 | 1983 | 2269 | 2564 |
| 165 | 106 | 216 | 363 | 560 | 825 | 1123 | 1429 | 1719 | 2014 | 2303 | 2600 |
| 170 | 109 | 221 | 371 | 572 | 842 | 1144 | 1453 | 1744 | 2043 | 2335 | 2635 |
| 175 | 112 | 226 | 378 | 583 | 858 | 1164 | 1476 | 1767 | 2069 | 2365 | 2667 |
| 180 | 114 | 230 | 386 | 595 | 874 | 1183 | 1496 | 1789 | 2094 | 2394 | 2699 |
| 185 | 117 | 234 | 393 | 605 | 890 | 1200 | 1516 | 1810 | 2119 | 2421 | 2730 |
| 190 | 119 | 238 | 399 | 616 | 905 | 1218 | 1535 | 1832 | 2143 | 2446 | 2759 |
| 195 | 122 | 242 | 406 | 626 | 920 | 1235 | 1553 | 1852 | 2166 | 2470 | 2786 |
| 200 | 124 | 246 | 412 | 635 | 934 | 1251 | 1570 | 1870 | 2185 | 2493 | 2813 |
| Maximum MAI | 0.6 | 1.4 | 2.3 | 3.6 | 5.3 | 7.3 | 9.6 | 12.1 | 14.8 | 17.5 | 20.3 |
| Age for Maximum MAI | 155 | 130 | 120 | 120 | 115 | 110 | 105 | 100 | 90 | 80 | 75 |

These volumes are from Xeno yield tables with no reductions or net downs.

The initial conditions for this table are:

| | |
|---|---|
| Number of natural stems | 1500/ha Douglas-fir |
| Percent distribution of natural stems | 90% |
| Years of natural regeneration | 5 |
| No spacing | |

## Table f6

| Yield Table Volumes Used in TFL 39 Management and Working Plan No. 8 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Age** | **Site Index** | | | | | | | | | | |
| | **12** | **15** | **18** | **21** | **24** | **27** | **30** | **33** | **36** | **39** | **42** |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 7 | 15 |
| 20 | 0 | 0 | 0 | 0 | 0 | 3 | 8 | 17 | 30 | 49 | 75 |
| 25 | 0 | 0 | 0 | 2 | 7 | 18 | 35 | 59 | 89 | 128 | 179 |
| 30 | 0 | 0 | 2 | 7 | 23 | 49 | 84 | 127 | 177 | 241 | 318 |
| 35 | 0 | 1 | 5 | 21 | 54 | 99 | 153 | 215 | 285 | 373 | 476 |
| 40 | 0 | 2 | 15 | 46 | 98 | 159 | 230 | 310 | 399 | 510 | 638 |
| 45 | 0 | 6 | 33 | 78 | 146 | 222 | 308 | 405 | 514 | 648 | 802 |
| 50 | 0 | 16 | 56 | 114 | 195 | 283 | 384 | 498 | 630 | 786 | 964 |
| 55 | 2 | 30 | 80 | 149 | 242 | 343 | 458 | 590 | 743 | 922 | 1118 |
| 60 | 6 | 45 | 105 | 184 | 287 | 399 | 528 | 680 | 853 | 1053 | 1261 |
| 65 | 13 | 60 | 129 | 216 | 328 | 452 | 598 | 768 | 961 | 1176 | 1392 |
| 70 | 20 | 75 | 152 | 247 | 368 | 504 | 666 | 853 | 1064 | 1289 | *1511 |
| 75 | 28 | 89 | 174 | 276 | 406 | 554 | 731 | 935 | 1162 | 1392 | 1617 |
| 80 | 35 | 103 | 195 | 303 | 441 | 602 | 794 | 1013 | 1253 | *1486 | 1712 |
| 85 | 42 | 117 | 214 | 328 | 475 | 648 | 856 | 1086 | *1336 | 1572 | 1800 |
| 90 | 49 | 129 | 232 | 352 | 507 | 692 | 914 | 1157 | 1412 | 1650 | 1879 |
| 95 | 56 | 142 | 249 | 375 | 540 | 735 | 971 | *1224 | 1481 | 1722 | 1954 |
| 100 | 63 | 153 | 265 | 397 | 570 | *776 | *1024 | 1285 | 1544 | 1786 | 2023 |
| 105 | 69 | 164 | 280 | *417 | 599 | 815 | 1075 | 1342 | 1601 | 1847 | 2088 |
| 110 | 75 | 174 | *294 | 436 | *628 | 852 | 1122 | 1393 | 1654 | 1903 | 2149 |
| 115 | 81 | 183 | 307 | 454 | 654 | 888 | 1168 | 1443 | 1704 | 1957 | 2207 |
| 120 | 86 | 192 | 319 | 472 | 680 | 922 | 1210 | 1489 | 1749 | 2006 | 2261 |
| 125 | 92 | *201 | 331 | 489 | 703 | 954 | 1250 | 1531 | 1790 | 2052 | 2313 |
| 130 | 97 | 209 | 342 | 505 | 726 | 985 | 1287 | 1569 | 1830 | 2096 | 2361 |
| 135 | 102 | 216 | 353 | 521 | 748 | 1015 | 1322 | 1605 | 1868 | 2137 | 2408 |
| 140 | 106 | 223 | 363 | 537 | 770 | 1043 | 1355 | 1639 | 1903 | 2177 | 2452 |
| 145 | 111 | 230 | 373 | 551 | 790 | 1071 | 1385 | 1671 | 1938 | 2215 | 2494 |
| 150 | 115 | 237 | 382 | 564 | 810 | 1098 | 1414 | 1702 | 1971 | 2249 | 2533 |
| 155 | *119 | 243 | 391 | 577 | 829 | 1122 | 1441 | 1731 | 2001 | 2283 | 2571 |
| 160 | 122 | 248 | 399 | 590 | 847 | 1146 | 1466 | 1759 | 2027 | 2318 | 2607 |
| 165 | 126 | 254 | 407 | 603 | 865 | 1169 | 1489 | 1783 | 2056 | 2350 | 2642 |
| 170 | 130 | 259 | 415 | 615 | 881 | 1191 | 1512 | 1807 | 2084 | 2381 | 2675 |
| 175 | 133 | 264 | 423 | 626 | 898 | 1212 | 1534 | 1829 | 2111 | 2410 | 2706 |
| 180 | 136 | 269 | 430 | 637 | 914 | 1231 | 1554 | 1851 | 2137 | 2436 | 2736 |
| 185 | 139 | 274 | 437 | 647 | 929 | 1250 | 1574 | 1871 | 2162 | 2461 | 2765 |
| 190 | 142 | 278 | 443 | 657 | 943 | 1268 | 1592 | 1890 | 2185 | 2487 | 2792 |
| 195 | 145 | 282 | 450 | 667 | 957 | 1286 | 1610 | 1909 | 2204 | 2509 | 2818 |
| 200 | 147 | 286 | 455 | 676 | 970 | 1302 | 1627 | 1927 | 2225 | 2531 | 2844 |
| Maximum MAI | 0.8 | 1.6 | 2.7 | 4.0 | 5.7 | 7.8 | 10.2 | 12.9 | 15.7 | 18.6 | 21.6 |
| Age for Maximum MAI | 155 | 125 | 110 | 105 | 110 | 100 | 100 | 95 | 85 | 80 | 70 |

These volumes are from Xeno yield tables with no reductions or net downs.

The initial conditions for this table are:

| | |
|---|---|
| Number of natural stems | 3000/ha Douglas-fir |
| Percent distribution of natural stems | 90% |
| Years of natural regeneration | 5 |
| No spacing | |

## Table f7

| Yield Table Volumes Used in TFL 39 Management and Working Plan No. 8 | |
|---|---|
| **Total Age** | **Site Index** |

| | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 | 39 | 42 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 9 | 23 |
| 20 | 0 | 0 | 0 | 0 | 0 | 3 | 11 | 23 | 42 | 68 | 106 |
| 25 | 0 | 0 | 0 | 2 | 9 | 24 | 50 | 81 | 122 | 170 | 232 |
| 30 | 0 | 0 | 2 | 9 | 30 | 64 | 111 | 162 | 223 | 291 | 377 |
| 35 | 0 | 1 | 6 | 25 | 66 | 122 | 189 | 257 | 336 | 424 | 530 |
| 40 | 0 | 2 | 17 | 52 | 113 | 188 | 272 | 355 | 450 | 556 | 685 |
| 45 | 0 | 7 | 36 | 87 | 167 | 256 | 354 | 449 | 562 | 687 | 842 |
| 50 | 0 | 16 | 59 | 126 | 220 | 321 | 429 | 539 | 671 | 820 | 999 |
| 55 | 2 | 30 | 85 | 165 | 271 | 381 | 499 | 626 | 779 | 953 | 1150 |
| 60 | 5 | 44 | 112 | 203 | 318 | 436 | 568 | 711 | 887 | 1080 | 1291 |
| 65 | 11 | 60 | 138 | 239 | 360 | 488 | 633 | 794 | 993 | 1201 | 1419 |
| 70 | 18 | 75 | 164 | 272 | 399 | 538 | 698 | 875 | 1092 | 1316 | *1537 |
| 75 | 25 | 91 | 188 | 302 | 436 | 585 | 760 | 956 | 1185 | *1418 | 1640 |
| 80 | 33 | 106 | 210 | 329 | 470 | 631 | 820 | 1032 | 1276 | 1509 | 1734 |
| 85 | 40 | 121 | 232 | 355 | 503 | 675 | 881 | 1107 | *1361 | 1593 | 1818 |
| 90 | 47 | 135 | 251 | 379 | *534 | 717 | 935 | 1179 | 1437 | 1671 | 1896 |
| 95 | 54 | 149 | 268 | *401 | 564 | *758 | *987 | *1245 | 1507 | 1742 | 1968 |
| 100 | 61 | 162 | 285 | 421 | 592 | 798 | 1039 | 1305 | 1571 | 1805 | 2035 |
| 105 | 67 | 174 | 300 | 441 | 619 | 836 | 1088 | 1363 | 1630 | 1865 | 2099 |
| 110 | 74 | 185 | *314 | 460 | 645 | 873 | 1136 | 1415 | 1680 | 1918 | 2158 |
| 115 | 80 | 195 | 328 | 477 | 670 | 908 | 1181 | 1464 | 1726 | 1970 | 2210 |
| 120 | 85 | 205 | 340 | 494 | 694 | 941 | 1223 | 1510 | 1772 | 2018 | 2262 |
| 125 | 91 | 214 | 351 | 510 | 718 | 974 | 1262 | 1550 | 1812 | 2065 | 2309 |
| 130 | 96 | *223 | 362 | 526 | 740 | 1005 | 1300 | 1586 | 1853 | 2108 | 2355 |
| 135 | 101 | 231 | 372 | 540 | 762 | 1035 | 1334 | 1623 | 1889 | 2147 | 2396 |
| 140 | 106 | 239 | 382 | 555 | 783 | 1063 | 1365 | 1654 | 1925 | 2184 | 2440 |
| 145 | 111 | 246 | 392 | 568 | 804 | 1090 | 1395 | 1687 | 1958 | 2221 | 2482 |
| 150 | 116 | 253 | 401 | 580 | 823 | 1116 | 1422 | 1715 | 1989 | 2256 | 2521 |
| 155 | 120 | 259 | 409 | 593 | 841 | 1140 | 1450 | 1745 | 2019 | 2292 | 2558 |
| 160 | 124 | 265 | 417 | 605 | 858 | 1164 | 1477 | 1772 | 2045 | 2324 | 2594 |
| 165 | *128 | 271 | 425 | 616 | 875 | 1187 | 1503 | 1796 | 2070 | 2354 | 2629 |
| 170 | 132 | 277 | 433 | 628 | 891 | 1209 | 1526 | 1817 | 2095 | 2385 | 2660 |
| 175 | 136 | 282 | 439 | 638 | 907 | 1229 | 1549 | 1839 | 2117 | 2414 | 2689 |
| 180 | 139 | 287 | 446 | 648 | 923 | 1249 | 1568 | 1859 | 2141 | 2441 | 2718 |
| 185 | 143 | 292 | 453 | 658 | 938 | 1267 | 1587 | 1878 | 2162 | 2468 | 2745 |
| 190 | 146 | 297 | 459 | 668 | 952 | 1286 | 1606 | 1895 | 2180 | 2491 | 2771 |
| 195 | 149 | 301 | 465 | 677 | 966 | 1304 | 1621 | 1911 | 2201 | 2513 | 2798 |
| 200 | 152 | 305 | 471 | 686 | 979 | 1320 | 1637 | 1928 | 2220 | 2535 | 2823 |
| Maximum MAI | 0.8 | 1.7 | 2.9 | 4.2 | 5.9 | 8.0 | 10.4 | 13.1 | 16.0 | 18.9 | 22.0 |
| Age for Maximum MAI | 165 | 130 | 110 | 95 | 90 | 95 | 95 | 95 | 85 | 75 | 70 |

These volumes are from Xeno yield tables with no reductions or netdowns.

The initial conditions for this table are:

| | |
|---|---|
| Number of natural stems | 6000/ha Douglas-fir |
| Percent distribution of natural stems | 90% |
| Years of natural regeneration | 5 |
| No spacing | |

# ATTACHMENT 2

## LETTERS OF APPROVAL

BRITISH COLUMBIA

File: 19700–20/TFL39

July 23, 1998

MacMillan Bloedel Limited
35 Front Street
Nanaimo, British Columbia
V9R 5H9

Dear Peter Kofoed:

**Re: Tree Farm License 39, Terms of Reference for a Review and Update of Operability Mapping in TFL 39, dated April 16, 1998**

The Ministry of Forests staff have reviewed the above proposal and find it acceptable for use in estimating the timber harvesting base for the purpose of timber supply analysis in preparation of Management Plan No. 8.

The review also concluded that your proposal is similar to the methodolgy being applied to the Queen Charlotte Islands (QCI) Timber Supply Area as part of the timber supply review of that management unit. In order to ensure that this consistency is maintained, please consult with the QCI district staff, as part of this process.

In addition, further consultation with staff of the QCI and Mid Coast Forest Districts is required to ensure that concerns raised specific to this issue by these two forest districts in the allowable annual cut rationale for Management Plan No. 7 are addressed.

Yours truly,

Darrell Robb
Acting Regional Manager
Vancouver Forest Region

cc: Don Sluggett, District Manager
Campbell River Forest District

Jack Dryburgh, District Manager
Port McNeill Forest District

**Ministry of Forests** Vancouver Regional Office
Mailing Address
2100 Labieux
Nanaimo BC V9T 6E9
Tel: (250) 751-7134
Fax: (250) 751-7198
Location
Nanaimo

Greg Hemphill, District Manager
Sunshine Coast Forest District

Cindy Stern, District Manager
Queen Charlotte Islands Forest District

Otto Pflanz, District Manager
Mid Coast Forest District

J.B. Koch, Senior Analyst, Tree Farm Licences
Timber Supply Branch

Doug Stewart, TFL Forester
Vancouver Forest Region

BRITISH COLUMBIA Ministry of Forests Sunshine Coast Forest District MEMORANDUM

Org. to Val

File: 19710-30/TFL 39 #8



December 17, 1999

**CLASSIFIED**

To: Ken Collingwood

From: Greg Hemphill

**Re: Operability Mapping for Block 1 of Tree Farm Licence 39**

My staff has reviewed Weyerhaeuser's operability mapping of Tree Farm Licence 39, Block 1. Changes from the mapping used for Management Plan #7 were evaluated and are believed to be acceptable for the purposes of timber supply analysis for Management Plan #8.

Greg Hemphill Acting On
District Manager
Sunshine Coast Forest District

pc: Weyerhaeuser Company Limited – Stillwater Division
Attention: Walt Cowlard

BRITISH COLUMBIA Ministry of Forests Campbell River Forest District

# MEMORANDUM

File: 19710-30/TFL39

November 10, 2000

NOV 21 2000

To: Ken Collingwood
Regional Manager
Vancouver Forest Region

From: Donald R. Sluggett
District Manager

**Re: Operability Mapping for Tree Farm Licence 39, Block 2**

Campbell River Forest District staff has completed their review of the most recent operability mapping for TFL39, Block 2. Our review consisted of an office review of air photography and maps followed by a helicopter flight of several sites on September 21, 2000. Shane Renouf, RPF, Engineer with Weyerhaeuser, North Island Timberlands, accompanied the flight. Areas examined in the office were Stewart Lake, John Fraser Lake and Consort Creek. Areas examined by helicopter were the Tsitika River (including Andrea Creek, Catherine Creek, and Claude Elliot Creek) and the Upper Eve River. The helicopter review focused on non-conventional and marginally economic operability categories.

The issue of road access to Andrea Creek was discussed during the flight and remains a concern. This area lies west of a new protected area (Robson Bight) and road construction from the north will be difficult due to adverse grade. We recommend a more detailed road access plan for this area be submitted for our review. If conventional road access is not feasible to this area, a reclassification of the operability types will be required as well as an estimate of the change in operable timber volumes resulting from this reclassification.

Our overall conclusion is that the mapping is satisfactory and is acceptable for use in the timber supply analysis for Management Plan No. 8.

Any questions regarding TFL 39, Management Plan No. 8 or this letter please contact Maddalena Di Iorio Dunn, District Planner, of this office at 250-286-9304.

Donald R. Sluggett
District Manager

pc: Peter Kofoed, Weyerhaeuser Company Limited, Nanaimo

BRITISH COLUMBIA

MAY 1 0 1999

File: 19710-30 TFL 39 MP # 8

May 10, 1999

Stan Price, R.P.F.
MacMillan Bloedel Limited
P.O. Box 5000
Port McNeill, British Columbia
V0N 2R0

Dear Stan Price:

Thank you for the opportunity to review the revised operability mapping for the Block 7 portion of Tree Farm Licence (TFL) 39 on April 22, 1999, and again on May 7, 1999. I am satisfied that the revised operability mapping as presented and discussed at the May 7, 1999, meeting is acceptable for the purpose of timber supply analysis. The physical mapping along with suitable net downs for terrain and other *Forest Practices Code of British Columbia Act* constraints will provide a reasonable representation of the timber harvesting land base. From our discussion I understand that the marginal economic areas will be modelled separately so that their impact and contribution can be assessed.

Though changes to the operability mapping are not required at this time, I do however, offer the following suggestions for refinement in the future:

1) The economic criteria for marginal and uneconomic areas should be tested and customised to reflect the specific operating conditions present in Block 7.

2) The net downs for terrain should be reviewed against the actual experienced deletions attributable to terrain.

3) A polygon review should be conducted to assess the viability of helicopter areas including marginal economic areas that may be beyond a reasonable operable flight distance.

Yours truly,

Edward Frisby, R.P.F.
Tenures Officer
Mid Coast Forest District

pc: [redacted], MacMillan Bloedel Limited, Nanaimo

**Ministry of Forests**
Mid Coast Forest District
Location:
Sawmill Road
Hagensborg, British Columbia
Mailing Address:
P.O. Box 1000
Bella Coola, British Columbia
V0T 1C0
Tel: (250) 982-2000
Fax: (250) 982-2090

File: 13390–30/TFL 39

January 12, 1999

Peter Kofoed, RPF
Planning Forester
MacMillan Bloedel Limited
65 Front Street
Nanaimo, British Columbia
V9R 5H9

Dear Peter Kofoed:

I have reviewed your proposal and the request to recompile the Tree Farm License (TFL) 39 inventory for the upcoming Management Plan (MP) #8 as presented in your letter of October 30, 1998. I agree with your general approach, and provide the following comments:

1.0) Inventory Recompilation

The proposal is acceptable.

2.0) Application of Inventory audit results in the MP #8 analysis

The proposal is acceptable, however, I recommend that a sensitivity analysis of inventory volumes be provided for the MC 1 types for the ratio of inventory to ground test. As you are aware, our position is that overall total volumes should be adjusted regardless of statistical significance.

3.0) Ministry of Forests Work on Loss Factors and Taper Equations in the Queen Charlotte Islands (QCI)

At this time we are not in a position to release the adjusted new taper loss factor models for the QCI, and therefore this information cannot be used by MacMillan Bloedel in MP #8.

**Ministry of Forests** | Resource Inventory Branch | Location 722 Johnson Street | Mailing Address P.O. Box 9516 Victoria, BC V8W 9C2 Tel: (250) 387-1314 Fax: (250) 387-5999

Peter Kofoed, RPF
Page 2

Breakage and Waste 2 Allowance for MP #8

The proposal is acceptable.

Please accept my apologies for the delay in approving the inventory adjustments. Please call the undersigned @ (250) 387-6722 with any questions or concerns.

Yours truly,

Retyped from original (no signature)

Dave Gilbert
Director
Resources Inventory Branch

***8-25-99***

***D.E. Gilbert***
***Director, Resources Inventory Branch***
***Ministry of Forests***
***722 Johnson St.***
***Victoria, B.C.***
***V8W 3E7***

***Dear Sir,***

RE: Addendum and addition to audit of Tree Farm License (TFL) 39 and use of the inventory in Management Plan (MP) # 8

***This note updates the letter of Oct. 30, 1998. The memo is the same one sent then with the addition of the Block 5 (Phillips Arm) results. Rather than use Block 5 in the sensitivity analysis we intend to use the attached ratio for the MC III in the base case.***

***Note that a mistake was made in the 1998 letter: the adjustment for Block IV MC III (photocoded) will be + 26% not 17% (the inventory and audit volumes are unchanged).***

***If you have any questions or concerns do not hesitate to contact me.***

***Sincerely,***

***N.J. Smith***
***Analyst***

***cc. Peter Kofoed***
***Keith Tudor***
***Ian Turner***

Nanaimo
Woodlands

MacMillan Bloedel Limited
INTER-OFFICE MEMO

**TO:** P.J. Kofoed

**FROM:** N. Smith
Phone: 755-3517
**FAX: 755-3550**

**DATE:** August 25, 1999

**SUBJECT: TFL 39 Inventory Audit Results – addendum for Ian Turner's Memo Aug 5, 1999**

I have used Ian's numbers, removed unnecessary statistics, added areas (1995) to give indication of area affected, actual ratios and our proposed inventory adjustment ratios using the agreed procedures.

Attached are the results of the TFL 39 Inventory Audit.

**1964 Inventory Stands (MC1)**

| | Blocks | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 4 | 5 | 6 | 7 |
| • Inventory [1] | 765.8 | 765.2 | 896.4 | 759.5 | 688.3 | 660.7 |
| • Audit | 758.8 | 834.7 | 848.2 | 856.6 | 616.0 | 629.6 |
| • Observations | 71 | 116 | 66 | 91 | 200 | 100 |
| • Df | 70 | 115 | 65 | 90 | 199 | 99 |
| • **T** | **0.14580** | **1.78010** | **0.95118** | **1.91134** | **3.10807** | **0.95552** |
| • P(T<=t) two-tail | 0.88450 | 0.07770 | 0.34503 | 0.05887 | 0.00216 | 0.34164 |
| • **t Critical two-tail** | **1.99444** | **1.98081** | **1.99714** | **1.98667** | **1.97196** | **1.98422** |
| • **actual ratio** | **0.99** | **1.09** | **0.95** | **1.13** | **0.89** | **0.95** |
| • **adjustment ratio** | **1.00** | **1.00** | **1.00** | **1.00** | **0.89** | **1.00** |
| • **area (ha.)** | **3,700** | **48,700** | **3,500** | **2,800** | **83,700** | **11,500** |

**NO SIGNIFICANT DIFFERENCE (95% LEVEL) WERE NOTED IN THE 1964 INVENTORY EXCEPT IN BLOCK 6 USING AGREED PAIRED T-TEST.**

**1980 Photocoded stands (MCIII)**

| | Blocks | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 4 | 5 | 6 | 7 |
| • Photocoded | 563.6 | 493.6 | 551.3 | 556.1 | 434.6 | 426.7 |
| • Audit | 737.5 | 770.5 | 695.9 | 848.1 | 468.0 | 542.7 |
| • Observations | 78 | 91 | 20 | 91 | 96 | 100 |
| • Df | 77 | 90 | 19 | 90 | 95 | 99 |
| • **T** | **3.45744** | **7.15911** | **2.18624** | **6.37415** | **1.13791** | **3.76650** |
| • P(T<=t) two-tail | 0.00089 | 0.00000 | 0.04152 | 0.00000 | 0.25802 | 0.00028 |
| • **t Critical two-tail** | **1.99125** | **1.98667** | **2.09320** | **1.98667** | **1.98525** | **1.98422** |
| • **actual ratio** | **1.31** | **1.56** | **1.26** | **1.53** | **1.08** | **1.27** |
| • **adjustment ratio** | **1.31** | **1.56** | **1.26** | **1.53** | **1.08** | **1.27** |
| • **area (ha.)** | **7,400** | **12,100** | **1,900** | **4,600** | **10,500** | **11,000** |

**SIGNIFICANT DIFFERENCES (95% LEVEL) WERE NOTED IN ALL BLOCKS EXCEPT FOR BLOCK 6 USING AGREED PAIRED T-TEST.**

[1] Dead useless removed and Kozak's Taper equation

**MacMillan Bloedel Limited** INTER-OFFICE MEMO

TO Terry Rollerson AT Vancouver Forest Region

FROM Shelley Higman AT Sustainable Forestry DATE February 18, 1998

COPIES TO Peter Kofoed, Solid Wood Group
Mike Hooper, Solid Wood Group

SUBJECT **TFL 39 MP #8 Netdowns for Terrain Stability**

Thank you for meeting with me on February 11, 1998 to discuss suitable netdown percentages for the terrain in MacMillan Bloedel's TFL 39. The netdown percentages will be used in the Timber Supply Analysis for Management Plan #8.

To summarize, the following is what we agreed upon as netdown percentages:

| Block | Division | Map Type | Mapper | Netdown |
|---|---|---|---|---|
| 1 | Stillwater | Es | Madrone (1993) | Es1 @ 90%<br>Es2 @ 20% |
| 2 | Eve, Menzies, Kelsey | Es, V-Class and VI-Class | Es: Ryder (1993)<br><br>V-Class: Maynard ('95-'96)<br><br>VI-Class: Dunkley & Rollerson | Es:<br>Es1 @ 85%<br>Es2 @ 15%<br>V-Class:<br>V @ 90%<br>IV @ ≤ 20%*<br>VI-Class:<br>VI @ 100%<br>V @ 90%<br>IV @20% |
| 3 | Port McNeill | Es | J.M.Ryder (1993) | Es1 @ 85%<br>Es2 @ 15% |
| 4 | Port McNeill | Es | J.M.Ryder (1993) | Es1 @ 85%<br>Es2 @ 15% |
| 5 | Stillwater | Es | Madrone (1993) | Es1 @ 90%<br>Es2 @ 20% |
| 6 | Queen Charlotte | VI-Class | Dunkley and Rollerson | VI @ 100%<br>V @ 90%<br>IV @20% |
| 7 | Port McNeill | V-Class | J.M.Ryder (1995) | V @ 90%<br>IV @ ≤ 20%* |

* Explained below

As discussed, for the recent mapping carried out in Block 2 (5-Class mapping on two 1:20,000 scale mapsheets by D. Maynard) and Block 7 (5-Class mapping on nine 1:20,000 scale mapsheets by J.M. Ryder), the Class IV netdown percent will correspond to the percentage of gullied Class IV polygons, which will be calculated as follows:

% Class IV Netdown = 100 * (# gullied Class IV Polygons) / (total # Class IV Polygons)

If the netdown percentage determined in the above equation is greater than 20%, then 20% will be used as the netdown percent.

We require approval on this approach before procedding with the Timber Supply Analysis for MP #8.

Thank you for your response in this matter. Please contact me at 755-3421 should you have any further questions.

Shelley Higman, P.Geo.
Land Use Planning Advisory Team

## Scanned Fax From Terry Rollerson to Shelley Higman

**Rollerson, Terry FO, 07:11 AM 2/24/98 , RE: TFL 39 Netdowns**

Return-Path: <Terry.Rollerson@gems9.gov.bc.ca>
Content-return: allowed
Date: Tue, 24 Feb 1998 07:11:37 -0800
From: "Rollerson, Terry FOR:EX" <Terry.Rollerson@gems9.gov.bc.ca>
Subject: RE: TFL 39 Netdowns
To: 'Shelley Higman' <shelleyh@mail.islandnet.com>
Cc: "Sutherland, Gary FOR:EX" <Gary.Sutherland@gems9.gov.bc.ca>

Shelly:

I have reviewed your memo on the proposed TFL 39 netdowns. I think that
these netdowns for terrain stability are quite satisfactory. I will forward this mail to Gary Sutherland in Planning so that he can forward
it to his staff.

Best regards,

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Terry Rollerson
Research Manager - Vancouver Forest Region
Telephone: 250-751-7121, Fax: 250-751-7198
mailto:Terry.Rollerson@gems9.gov.bc.ca

> ----------
> From: Shelley Higman[SMTP:shelleyh@mail.islandnet.com]
> Sent: February 12, 1998 2:12 PM
> To: Rollerson, Terry FOR:EX
> Subject: TFL 39 Netdowns
>
> <<File: 39SOIL#8.doc>>
> Hi Terry,
>
> Attached is the netdown memo we discussed for your review. If you
> can't
> open the file, please let me know.
>
> Cheers,
> Shelley
>
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

BRITISH COLUMBIA

January 14, 2000

Shelley Higman, P.Eng/P.Geo
Weyerhauser
65 Front Street
Nanaimo, B.C.
V9R 5H9

Dear Ms Higman:

Thank you for your letter of November 23, 1999. During our meeting of October 15 with Terry Rollerson of Golder Associates Ltd., and in your letter, you request changes to the soil netdowns for Block 7, TFL 39.

If the current netdown factors for terrain stability are applied with the five-class terrain stability mapping done in 1996, the total soil netdown becomes much higher than previous soil netdowns. The primary reason for this is the amount of Class IV terrain identified in the 1996 mapping. In this type of mapping much of the Class IV terrain may be susceptible to road-related landslides, but will rarely have clearcut-related landslides. Therefore these types of Class IV polygons should not be included in netdowns for the AAC calculation. In addition, it appears from my review of the terrain mapping that some Class V terrain may have operationally viable areas.

The request to change the soil netdowns for Class V terrain to 80%, and to change the soil netdown for Class IV terrain to 5% is reasonable. The AAC soil netdown calculation for Block 7, TFL 39 should use these netdown factors. Note that if the 1996 terrain mapping for the Namu area should be modified and used in future AAC calculations, then the netdown factors should also be changed. In particular, if polygons are identified as IVR (Class IV for roads, but Class III or lower for clearcutting), then the Class IV netdown factor will need to be increased.

Yours truly,

Tom Milliard

14/01/00

Tom Milliard
Research Geomorphologist
Vancouver Forest Region

BRITISH COLUMBIA



File: ORCS 12860-02

April 6, 2000

Rod Tysdal
Weyerhaeuser Company Limited
Stillwater Division
201 7373 Duncan Street
Powell River, British Columbia
V8A 1W6

Dear Rod Tysdal:

Thank you for your letter of February 14, 2000. My staff has reviewed your proposal outlining recreation net downs for the Tree Farm Licence (TFL) 39 Block 1 timber supply analysis. The areas identified specifically for recreation along with the more significant net downs for visual quality, wildlife and biodiversity will adequately manage and conserve the recreation resources of TFL 39 Block 1. Your proposal is acceptable to the Ministry of Forests.

If you have any further questions please contact Barry Miller, District Planning Forester at 485-0737

Yours truly,

Per: mj, DM

Greg Hemphill
District Manager
Sunshine Coast Forest District



**Ministry of Forests**
Sunshine Coast Forest District
Mailing Address:
7077 Duncan Street
Powell River, BC V8A 1W1
Tel: (604) 485-0700
Fax: (604) 485-0799

BRITISH COLUMBIA

File: 16350-30/TFL39

January 10, 2000

Peter Kofoed
Weyerhaeuser
65 Front Street
Nanaimo, British Columbia
V9R 5H9

Dear Peter Kofoed:

The updated Recreation Inventory (features and ROS), and the new Visual Landscape Inventory (VLI), for the Block 6 portion of Tree Farm Licence (TFL) 39, within the Queen Charlotte Islands Forest District have been reviewed by Ministry of Forests staff and are hereby approved for use in the Recreation Analysis Report and the TFL timber supply analysis, subject to the following conditions:

1) Although Karst terrain has been properly identified on Louise Island, there is inadequate recognition of the recreation feature class significance within some areas (e.g., polygon #0906, mapsheet 103B.092). This area has previously been identified as having high potential for Cave/Karst development according to the reconnaissance level inventory (scale 1:250,000), completed in 1994, and recently updated as of March 1999. Accordingly, those polygons with recreation feature KOO falling within the high Cave/Karst potential, should more appropriately be classed as recreation feature class 1 until more detailed Karst inventory work has been undertaken to verify the presence of Cave/Karst features. Similarly, the recreation feature class within polygon #0871 on mapsheet 103B.091, should be classed 1 rather than 2 to reflect the moderate to high Cave/Karst potential that has been identified at the reconnaissance level inventory.

2) There are several coding inconsistencies between the inventory report and the mapsheets (e.g., mapsheet 103B.092, polygons 0909, 0912 and 0914-0917). The report indicates BH0, however, the mapsheets show AH0, and this should be corrected to reflect the proper coding.

3) The inventory report prepared in October 1997, includes material that is not required (e.g., Page 29, Section 2, "Implications of Feature Significance and Feature Class") and does not include information that is considered essential (e.g., conclusions or recommendations). This should be amended to meet the format and content requirements of the inventory report.

4) Some of the information expressed in the VLI map labels is not to the May 1997 standard. My staff does realize that at the time the VLI was being updated, standards were still being



**Ministry of Forests** Vancouver Regional Office Location: 2100 Labieux Road, Nanaimo Mailing Address: 2100 Labieux Road Nanaimo, BC V9T 6E9
Tel: (250) 751-7001
Fax: (250) 751-7190

Peter Kofoed

developed. Kevin Lee, Regional Landscape Forester, Vancouver Forest Region, has had discussions with Mike Hooper of your office on the possibility of updating the attributes of the inventory database to the current standards. These changes have to do with the removal of the Visual Sensitivity Rating data, adding Visual Related factor data, and determining the Visual Sensitivity Class. These minor changes are desirable so that a comparative examination across the entire TFL 39 will be possible, and it is valuable information to use operationally. They will not affect the existing Recommended Visual Quality Class and the Visual Absorption Capability information. The latter ratings can still be used by providing information to Rory Annett, District Manager, Queen Charlotte Islands Forest District, to determine the extent of the scenic areas to be managed within Block 6.

It should be realized, that although I have approved the VLI, it is the District Manager who has the sole responsibility to determine the size and management requirements of the scenic areas under Section 1 of the *Operational Planning Regulations*. This description (ie.size and management requirements) will be modelled into the timber supply analysis for TFL 39 Block 6.

I note that the recreation inventory has identified a large additional area of Er1 and Er2 relative to that identified in Management Plan #7 for TFL 39, Block 6. As your draft information package for TFL 39 indicates, Weyerhaueser has initiated a project to review the TFL 39 recreation netdowns for strategic analysis. The results of this review should also be incorporated into the timber supply analysis for TFL 39, Block 6.

Should you have any further questions on this review, please contact Doug Herchmer, Recreation Forester, Vancouver Forest Region, at (250) 751-7104, or Kevin Lee, Landscape Forester, at (250) 751-7112.

Yours truly,

Ken Collingwood
Regional Manager
Vancouver Forest Region

pc: Rory Annett, District Manager
Queen Charlotte Islands Forest District

Doug Herchmer, Recreation Forester
Vancouver Forest Region

Kevin Lee, Landscape Forester
Vancouver Forest Region

Don Benn, Juan de Fuca Consultants,
698 Rockridge Place, Victoria, B.C. V9E 1H3