Management Plan #8
Tree Farm Licence #39
July 2001 to June 2006

Embracing lands tributary to the communities of Powell River, Campbell River, Sayward, Port McNeill, Port Hardy, Sandspit, Queen Charlotte City, Skidegate, Port Clements, Juskatla and Masset

Peter J. Kofoed, RPF, Supervising Forester

Signed and Sealed on April 2 , 2001

Approved by the Authorized Signatory
at Weyerhaeuser BC Coastal Group

S.J. Coleman, RPF
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Management Plan #8 consists of four parts:

- Part I Management Plan Text
- Part II Compact Disc 1 which includes the Management Plan text and supporting appendices and other documents.
- Part III Compact Disc 2 which includes a digital presentation of maps.
- Part IV Paper Atlas of Overview maps

Summary

Management Plan (MP) #8 for Tree Farm Licence (TFL) 39 conforms to the requirements of the Ministry of Forests under the terms of the Licence Agreement. It acknowledges the overall authority of the Forest Practices Code and applicable Provincial Acts and Regulations.

The plan recognizes Weyerhaeuser's commitment to sustainable forest management and responsible stewardship. Two recent initiatives are central to the management strategies for MP #8.

- The Forest Project includes an increase in conservation of old-growth forests and wildlife habitat and a commitment to replace clearcut harvesting with variable retention by the end of 2003. The retention of more trees across the landscape, is consistent with public expectations and provides a more flexible basis for meeting wildlife, biodiversity, visual landscape and other resource objectives. It also has implications for timber harvesting, silvicultural and forest health strategies.

- Weyerhaeuser is committed to achieving third party forest certification to provide the public and customers with assurance that forest management systems meet or exceed specified standards. In TFL 39, it is Weyerhaeuser's target to achieve certification to the ISO (International Organization for Standardization) 14001 Environmental Management System standard and the CSA (Canadian Standards Association) Z809 Sustainable Forest Management system standard for all timberlands operations by the end of 2002. North Island Timberlands (Block 2 of TFL 39) has led the way, attaining both ISO 14001 and CSA Z809 certification in May of 1999.

More specific management objectives and strategies are grouped into three main headings; working with the community, integrated resource management and timber resource strategies.

"Working with the Community" describes objectives and strategies that recognize the economic importance of TFL 39 to various coastal communities including First Nations. A significant development in community involvement is the CSA Z809 standard's requirements for public involvement and stakeholder input.

The section on Integrated Resource Management highlights our commitments to the conservation and protection of non-timber resources. These include soils, water, cultural heritage, wildlife, biodiversity, recreation and visual landscapes.

Timber resource management strategies are directed towards achieving a sustainable production of wood and fibre and maintaining or enhancing the productivity of the forest. This includes:

- Forest establishment and tending strategies that emphasize high volumes, while recognizing other resource values. Wood quality characteristics such as narrow and even-ring widths, small knots and a low proportion of juvenile wood are associated with higher stocking. A wide diversity of stand conditions results from the natural range of sites and a variety of management requirements.

- Forest protection strategies that focus on preventing fire and on minimizing damage from insects, disease, wind damage and animal browse.

- A harvest strategy for second-growth (forest that generally is less than 100 years of age) that includes more flexibility than in the past for harvesting stands at different ages. This contributes to meeting varied management objectives and assists in achieving a gradual transition to long term harvest levels.

- An Allowable Annual Cut (AAC) of 3 680 000 m3 is proposed for TFL 39. This represents a 60 000 m3 reduction from MP #7 and is consistent with the strategy of gradually adjusting harvest levels towards the estimated long term harvest level (approximately 3.3 million m^3).

- The Small Business Forest Enterprise Program (SBFEP) annual cut is 162 218 m^3. In addition the recent transfer of TFL 39 from MacMillan Bloedel Ltd. to Weyerhaeuser has resulted in a 5% reduction in the crown contribution to the company AAC, an annual harvest volume of 152 522 m^3. The proportion of the company harvest to be logged by contractors is 42.7%

Weyerhaeuser is committed to the many regional and sub-unit (e.g. landscape unit) planning processes now under way. Of particular interest is the Stillwater Timberlands (Block 1 of TFL 39) “Pilot Project” for improving forest planning by simplifying the existing framework for government approvals while maintaining or improving environmental performance.

Resource inventories contribute to strategic analyses of timber supply and to operational planning. The plan includes a description of current inventories and commitments for review and update of these inventories during the next five years.

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The following people contributed to this Management Plan:

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Distribution List
Management Plan No. 8 For Tree Farm Licence No. 39

	Report *	Paper Map Atlas
Ministry of Forests:		
Regional Manager, Vancouver Forest Region	1	Complete
Director, Resource Tenures & Engineering Branch	1	Complete
District Manager, Queen Charlotte Islands Forest District	1	Block 6
District Manager Port McNeill Forest District	1	Blocks 3&4
District Manager, Sunshine Coast Forest District	1	Block 1
District Manager, Mid Coast Forest District	1	Block 7
District Manager, Campbell River Forest District	1	Blocks 2&5
Ministry of Water, Land and Air Protection		
Forest Ecologist Specialist, Queen Charlotte Islands Forest District	2	Block 6
Forest Ecosystem Specialist, Campbell River Forest District	2	Block 2
Forest Ecosystem Specialist, Mid Coast Forest District	2	Block 7
Forest Ecosystem Specialist, Sunshine Coast Forest District	2	Blocks 1&5
Forest Ecosystem Specialist, Port McNeill Forest District	2	Blocks 3&4
Weyerhaeuser, BC Coastal Group		
Vice-President Timberlands	3	
Nanaimo Woodlands		
Manager	3	
Operations Forester	3	
Planning Forester	1	
Planning Coordinator	3	Complete
Library	1	Complete
Timberlands Managers		
Manager North Island Timberlands	3	
Manager, Port McNeill Timberlands	3	
Manager Queen Charlotte Timberlands	3	
Manager, Stillwater Timberlands	3	
Timberlands Foresters/Engineers		
Division Engineer/Forester, North Island Timberlands	2	Block 2
Division Engineer/Forester, Port McNeill Timberlands	2	Blocks 3,4&7
Division Engineer/Forester, Queen Charlotte Timberlands	2	Block 6
Division Engineer/Forester, Stillwater Timberlands	2	Blocks 1&5

* 1. The report includes a paper copy of the Management Plan text and Appendices, as well as the text and map CDs.

2. The report includes a paper copy of the Management Plan text [excludes Appendices] and map and text CDs [includes Appendices] .

3. Copy of the covering letter only. The Management Plan may be accessed over the Company intranet.

An atlas of overview paper maps was distributed previously with the Twenty-Year Plan or the Draft Management Plan. The digital spatial data [compact disc #2] includes updates for some coverages [Grizzly bear habitat areas, the Twenty-Year Plan Blocks and Roads and Scenic Areas in Block 7; Roads in Blocks 3 and 4, and a corrected reference to recommended Visual Quality Classes for Blocks 2 to 7].

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Public Review Process	Interim Report
Pictures	Selected Digitized Photos, TFL 39

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Information Package [**Appendix II**]
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Timber Supply Analysis [**Appendix III**]
Twenty-Year Plan [Spatial Feasibility Study] [**Appendix IV**]
Current Resource Inventories [**Appendix V**]
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Adaptive management to refine forest practices on Weyerhaeuser [BC] coastal forest tenure

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TFL 39 MP #7 Reference Report	Management Plan #3 - TFL 44
NTR Data	Agency Meetings Recreation - Recreation-Landscape Inventory Updates Blocks 1-7 Terms of Reference Correspondence Approvals [new]
Annual Reports	TFL No. 39 Annual Reports 1999 - 1998 - 1997 - 1996

New Approach

Certification
Forest Management for the 21st Century
Forest Stewardship Plan

PART III: Compact Disc 2 - Digital Maps

Software and files are available to view resource themes by Block

PART IV: Paper Atlas of Overview Maps

Maps for Each Block include:

- Block location map
- Terms of Reference for maps
- Block Maps [where applicable]
  - Block and property boundaries [tenure]
  - Twenty-year Plan - harvest blocks
  - Guiding, trapping and mineral claims
  - Visual landscape and recreation
  - Soils and snow avalanche
  - Community watersheds and streams, lakes and wetlands
  - Wildlife
  - Biogeoclimatic variants
  - Physical features
  - Stewardship Zones

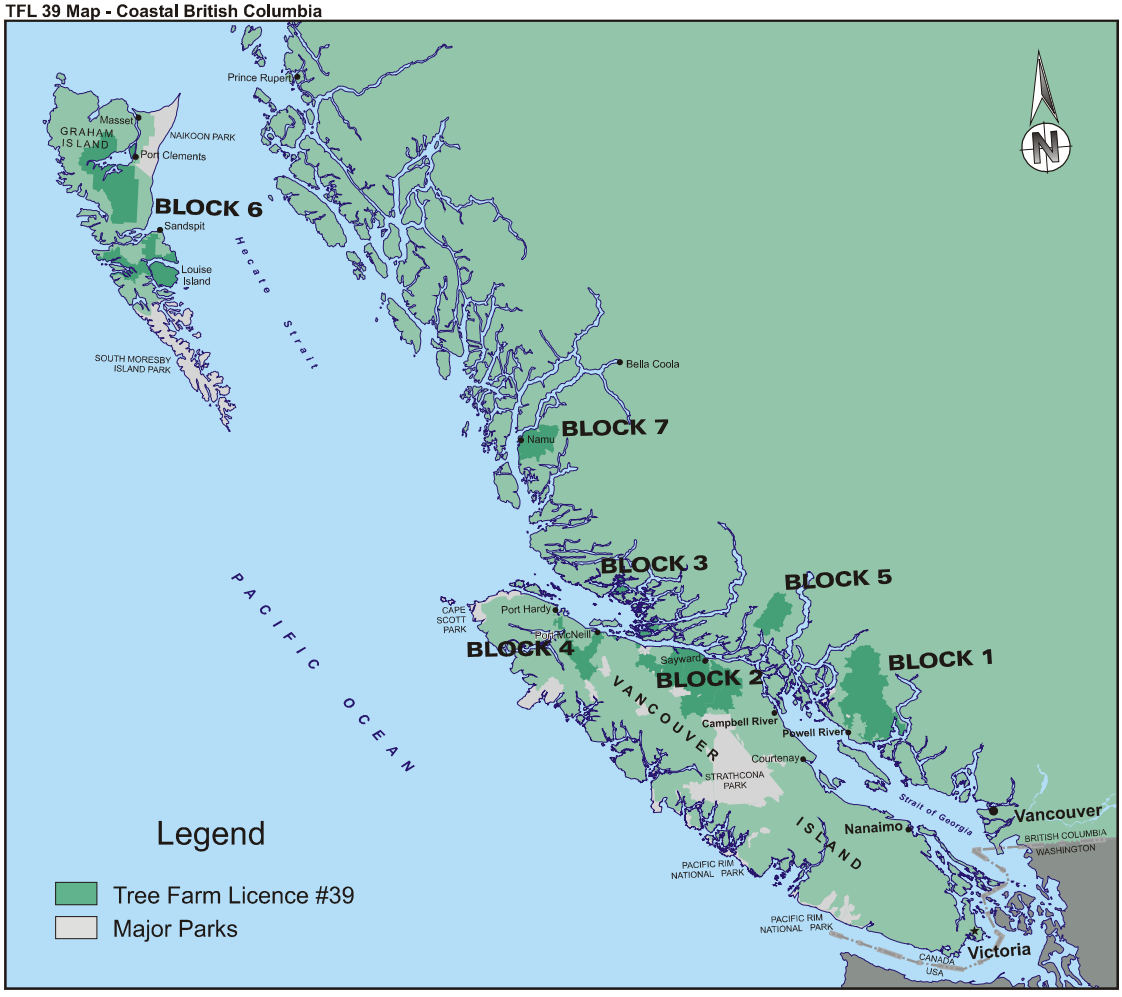
1.0 INTRODUCTION

1.1 General Description of Tree Farm Licence 39

Tree Farm Licence (TFL) 39 includes seven geographically separate blocks that are dispersed along the BC Coast from the Powell River area on the South Coast to Northern Vancouver Island, the Mid Coast and the Queen Charlotte Islands (refer to Figure 1).

Figure 1

TFL 39 Map - Coastal British Columbia



Blocks 1-7 of TFL 39 are identified in the above map.

The seven blocks are managed by four Weyerhaeuser Timberlands operations and are administered by five Ministry of Forest (MoF) Districts. Refer to Table 1.1.

Table 1.1 Block Descriptions

TFL 39 Block	Total Area (ha)	Weyerhaeuser Timberlands Operation	MoF Forest District
Block 1 (Powell River)	186, 919	Stillwater	Sunshine Coast
Block 2 (Adam River)	203,070	North Island	Campbell River
Block 3 (Coast Islands)	15,748	Port McNeill	Port McNeill
Block 4 (Port Hardy)	51,542	Port McNeill	Port McNeill
Block 5 (Phillips River)	47,411	Stillwater	Campbell River
Block 6 (QCI)	240,311	Queen Charlotte Islands	Queen Charlotte
Block 7 (Namu)	56,336	Port McNeill	Mid Coast
Total TFL 39	801,337		

TFL 39 covers over 800 000 ha, approximately two-thirds of which is productive forest land. Of the major tree species, western hemlock, western red cedar and yellow cypress are distributed throughout; Balsam (Amabilis fir) occurs in all Blocks other than Block 6 [Queen Charlotte Islands]. Spruce is common in the northern blocks (6 and 7) and Douglas-fir has a significant presence in the more southern blocks (1&2).

TFL 39 operations contribute significantly to the BC coastal economy, particularly to communities in the Queen Charlotte Islands, the mainland coast and Vancouver Island. Of the 4 500 plus jobs directly attributable to timber harvesting in TFL 39, processing of the logs and management of the lands, approximately 60% occurs outside the Vancouver – Lower Mainland area.

1.2 Purpose of the Management Plan

The TFL 39 Licence Agreement requires a Management Plan to be submitted and approved every five years. Management Plan (MP) #8 is a continuation of this process.

MP #8 defines our objectives and management strategies for the five-year period July 01, 2001 to June 30, 2006. It provides a strategic framework for operational planning and a connection to higher level plans

1.3 Administration and Management of Tree Farm Licence 39

The current TFL 39 results from the merger of TFL 39 and TFL 7 in December of 1988.

TFL 7 located in the Salmon River area north of Campbell River was granted to the Powell River Company in 1952. The original TFL 39 was acquired by the Powell River Company in 1961. In the early 1960s the Powell River Company merged with MacMillan and Bloedel Ltd. to form MacMillan Bloedel and Powell River Ltd., simplified to MacMillan Bloedel Ltd. in 1966.

When TFLs 7 and 39 were combined in 1988, TFL 7 became part of Block 2, simplifying management and administration.

On November 1st, 1999 MacMillan Bloedel became part of Weyerhaeuser. The coastal operations are now known as the Weyerhaeuser B.C. Coastal Group (BCCG).

The TFL is granted for a 25-year period. The licence is replaced every five years, subject to satisfactory performance. The current Tree Farm 39 licence was signed in March of 2000 and is for the 25-year period to March 1st, 2025. This licence is due to be replaced in 2005.

1.4 Highlights of the Plan

MP #8 builds on almost 50 years of management and demonstrates Weyerhaeuser's continuing commitment to manage the forests of TFL 39 in accordance with the current expectations of the people of British Columbia.

Major initiatives that occurred during MP #7 reflect this ongoing process of changing and adapting forest management to meet public expectations.

- The Forest Practices Code of British Columbia (FPC) is now fully implemented, forming a baseline for all forest management activities and an integral component of MP #8.

- In June of 1998, Weyerhaeuser BC Coastal Group announced the Forest Project. Key components include phasing out clearcut harvesting over a five-year period to be replaced by variable retention and an increase in conservation of old-growth forests and wildlife habitat. It also includes a commitment for achieving third party forest certification to provide customers and the public with assurance that Weyerhaeuser's forest management systems meet or exceed expectations. These Forest Project initiatives are central to the forest management strategy for MP #8.

- Stillwater Timberlands (Block 1 of TFL 39) is developing a Pilot Project focused on removing process from the existing framework for forest practice while maintaining or improving environmental standards. This project is proceeding under part 10.1 of the FPC; "Pilot Projects to Improve the Regulatory Framework for Forest Practices".

- Weyerhaeuser recognizes the importance of TFL 39 to local people. They play a significant role as contributors and critics in the Management Plan and other planning processes, while also sharing in the benefits the harvest of timber and other resources offer. For TFL 39, MP #8 includes a greater commitment to public and community input in forest planning. The CSA Z809 Standard for a Sustainable Forest Management System contains a strong requirement for public participation in the forest management planning process. In addition, public input contributes to the various regional and sub-unit planning processes that are occurring throughout TFL 39.

2.0 GOALS AND MANAGEMENT OBJECTIVES

The presentation of goals and management objectives has been revised from that presented in the Statement of Management Objectives, Options and Procedures (SMOOP, Appendix 1).

Section 2.1 presents the overall corporate goals.

Section 2.2 outlines Weyerhaeuser's Canadian Forest Stewardship Principles.

Section 3 describes two major strategies that are central to achieving the goals and meeting the stewardship principles:

- The Forest Project
- Forest Certification

Sections 4, 5 and 6 describe more specific resource objectives and issues and strategies to meet these objectives and concerns.

2.1 Corporate Goals

The Weyerhaeuser Corporate Vision is to be the best forest products company in the world.

In the context of forest management, the corporate goal is to practice sustainable forest management and responsible stewardship while providing a safe work place for employees.

2.2 Forest Stewardship Principles

Weyerhaeuser is committed to working with all stakeholders to maintain an appropriate balance between society's ever growing demands for various forest products and the need to conserve forest ecosystems.

Forest management in TFL 39 is guided by the following Forest Stewardship Principles.

Forest Stewardship Principles:

- Provide Opportunities for Community and Stakeholder Involvement (section 4)
- Furthering Relationships with First Nations (section 4.3)
- Minimize Impacts on Water Resources and Habitat Protection (section 5.1)
- Conservation of Soil Productivity (section 5.2)
- Management of Wildlife Habitat (section 5.4)
- Recognize and Consider Visual Impact and Recreation (sections 5.5 and 5.6)
- Responding to People's Needs (sections 5.3 and 6)
- Actively Support Research and Practical Science (Section 8)

Section 3 describes two major initiatives in sustainable forest management and responsible stewardship.

3.0 FOREST STEWARDSHIP INITIATIVES

3.1 The Forest Project – A New Forest Management Strategy

In June of 1998, MacMillan Bloedel (now part of Weyerhaeuser), announced a new forest management strategy – the Forest Project for its BC Coastal lands. 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.

Other important elements of the strategy include the Forest Certification process (refer to section 3.2) for assuring the public and customers that Weyerhaeuser's forest management systems meet or exceed specified standards and an adaptive forest management and monitoring system to ensure a process of continual improvement in forest management.

The Forest Project has two broad but interrelated objectives:

First: Ensure that our forest management strategy: retains future options, sustains healthy ecosystems, maintains economic opportunities, and sustains biological diversity.

Second: Learn from our actions and refine them.

This new forest management strategy is consistent with retaining social license to harvest in original forests, work safety, improved competitiveness and economic performance.

The remainder of this section provides a summary of the main elements and process of the Forest Project. For more information refer to:

- Appendix VIII – "Detailed Discussion on Forest Stewardship Zones"
- Copies of the following documents are included in the Compact Disc attached to the Management Plan.
    - "Guidelines for Designing Variable Retention – Layout and Silviculture Prescriptions". August 1999, revised June 2000. This is subsequently referred to as "Company Guidelines for Variable Retention"
    - "An Ecological Rationale for Changing Forest Management on MacMillan Bloedel's Forest Tenure", 1988 – prepared for MB by the Centre for Applied Conservation Biology at UBC.
    - A description of the Adaptive Management Framework.

3.1.1 Retention and Variable Retention

The term variable retention describes the overall approach, to follow nature's model by always retaining part of the forest after harvesting. It recognizes the role of structural complexity in forest ecosystem function and biological diversity. Variable retention can be implemented with a wide range of harvesting systems and can be combined with traditional silvicultural systems, such as shelterwood or selection to meet forest regeneration objectives. Various levels of retention can be used with different types, amounts and spatial patterns of structure. Retention can be dispersed throughout a cutblock (individual trees or small groups) or aggregated (larger groups) depending on the objectives.

Retention is recognized as a silvicultural system under BC forest law (Operational Planning Regulation (March 29, 1999)):

> "retention system" means a silvicultural system that is designed to:
>
> a. retain individual trees or groups of trees to maintain structural diversity over the area of the cutblock for at least one rotation, and
>
> b. leave more than half the total area of the cutblock within one tree height from the base of a tree or group of trees, whether or not the tree or group of trees is inside the cutblock.

The retention system is included in the list of "partial cutting" silvicultural systems. The retention system normally uses a one-pass harvesting approach, but may also be prescribed with several harvesting entries. For more information on the implementation of variable retention and retention systems (and other silvicultural systems such as shelterwood and selection) refer to the "Company Guidelines for Variable Retention".

3.1.2 Stewardship Zones

Weyerhaeuser BCCG is classifying its managed forestlands into three distinct stewardship zones in order to meet landscape, landuse and biodiversity objectives. The zones are named 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 group retention. The zones allow for a focused management approach that will deliver overall improved environmental benefits, often with improved economic efficiencies.

Assessment of and revisions to the Stewardship Zones are still occurring (the analysis for MP #8 includes an earlier draft of the Stewardship Zones – dated June, 1999). Consultation with government, environment groups and divisional engineers has resulted in changes. A complete ecological analysis of the zones is planned for completion by the end of 2000.

Stewardship zones and variable retention are part of Weyerhaeuser's strategy for meeting land-use objectives including landscape unit planning and the Vancouver Island Land Use Plan. Generally there is a good fit between the stewardship zones and government land-use objectives. In all areas, those land-

use objectives will be achieved, and often they will be exceeded, particularly in habitat and old-growth-zones. A Zoning Review Team consisting of MoF and MoELP representatives and Weyerhaeuser staff has been established. The mandate of this team is to evaluate the impacts and options for using variable retention in landscape units with an intermediate biodiversity emphasis that have also been designated a timber stewardship zone. Analysis of five such landscape units is underway and will be completed by 2003.

The following is a summary of the three zones. For a more detailed description refer to Appendix VIII. The landbase percentage targets apply to the total area of Weyerhaeuser BCCG's tenures. They may differ for TFL 39 alone.

- **Old–Growth Zone**: Approximately 10% of Weyerhaeuser BCCG's landbase will be in the "old-growth" zone. This will include 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 forest will be retained. Harvesting on the remaining third, will include apply uneven-aged management including group selection and irregular shelterwood systems. Minimum stand-level, long-term retention is 20%.

- **Habitat Zone**: This zone will comprise approximately 25% of Weyerhaeuser BCCG's landbase. It will include 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 will include various types of shelterwood, group selection and group retention and a mix of even and uneven-aged management. Minimum stand-level, long-term retention is 15%.

- **Timber Zone**: Approximately 65% of Weyerhaeuser BCCG's landbase will be included in this zone. It will include both private and public land designated low in biodiversity. The primary management objective is commercial timber production built on a solid conservation base. Silvicultural systems used here will include group retention and various types of shelterwood with even aged management. Minimum stand-level, long-term retention is 10% for group retention and 5% for dispersed retention.

The above describes the general strategy for applying silvicultural systems in each stewardship zone. Within this general structure, there is flexibility to assign the most appropriate silvicultural system according to site specific factors such as species, topography, and forest health.

3.1.3 Adaptive Management and Monitoring

Although well reasoned, the consequences of the new practices (of the Forest Project) are unknown. The Weyerhaeuser BC Coastal Group is committed to refining and improving the new practices through a program of adaptive management. Adaptive management is a formal process for continually improving management practices by learning from the outcomes of operational programs.

An adaptive management working group has been meeting for the past two years to develop a framework, methodology and pilot protocols for a wide range of organisms. The group includes members from Weyerhaeuser, MoF, MoELP, The Centre for Conservation Biology at the University of British Columbia and private contractors.

A broad goal and a criterion and major indicators of success have been defined.

- The broad goal is to sustain healthy, biologically diverse forests.
- The criterion for success is that biological richness and its associated values are sustained within Weyerhaeuser BC Coastal Group's tenures.
- The three main indicators of success are:
    - Indicator 1. Ecologically distinct habitat types are represented across the tenure to maintain lesser known species and ecological functions.
    - Indicator 2. The amount, distribution and heterogeneity of habitat and landscape elements important to sustain biological richness are maintained over time.
    - Indicator 3. Productive populations of species are well distributed throughout the tenure.

The evaluations (monitoring) include both "active" and "passive" components and will occur at both the stand and the landscape level.

The active adaptive management framework will include five designed comparisons that will be replicated three times and implemented by 2004. The treatments will be a minimum size of 20 ha. Each of the comparisons is designed to address a focused question, such as what happens when retention is held constant and group size is changed or what happens when group size is kept constant and variable retention levels are changed?

The extensive or passive adaptive management framework includes monitoring of structure, organism presence or absence, windthrow and forest health in variable retention openings. During 1999 and 2000 sampling of forest structure occurred at 142 sites throughout the company's coastal tenures and another 50 sites are planned for 2001. In addition, surveys of species have included birds, bryophytes and lichens, terrestrial and aquatic amphibians, terrestrial gastropods and squirrels.

The monitoring and adaptive management program also includes growth and yield (refer to section 8.2), regeneration, forest health and wind damage.

For more detail on the adaptive management strategy refer to New Approach \ Forest Strategy \ Adaptive Management on the attached compact disc.

3.1.4 Implementation

The Variable Retention Working Group facilitates on-going development of planning and policies. This group of foresters, engineers and biologists representing the BC Coastal operations meet on a regular basis.

Scientific panels are convened to review progress and provide input on the Forest Project. To date, annual meetings have been held in 1999 and 2000. In both, scientists were invited to the workshop to act as an expert panel. About half of the scientists were nominated by environmental organizations and half by the company. Also attending were representatives from environmental organizations and Weyerhaeuser.

Reporting and evaluation occurs annually. The results for 1999 show that the transition (to variable retention) strategy is on schedule. For all Coastal Operations, variable retention was applied to 35% of the area harvested and for TFL 39 it was 25%. A sample of variable retention blocks is evaluated annually to monitor performance and identify areas for improvement.

Emphasis has been placed on training. Up until mid 2000, approximately 250 people have taken a 3 or 4-day training course covering safety, objectives, prescriptions and layout for variable retention. A video has been produced to introduce employees to the rationale and basic elements of the VR approach. In addition a 90-minute training video has been developed that covers the detailed contents of the workshops in a modular format. This can be used for follow-up training on specific topics or comprehensive training of new employees.

3.2 Forest Certification

Forest certification provides structure and discipline to achieve responsible forest stewardship including an emphasis for on-going improvement. It provides customers and the public with third party verification that Weyerhaeuser's forest management systems meet or exceed specified standards.

The Weyerhaeuser BC Coastal Group is currently involved in three main forest certification standards:

- ISO 14001 standard for Environmental Management Systems (EMS)—ISO stands for the International Organization for Standardization.
- Canadian Standards Association (CSA) Z809 standard for a Sustainable Forest Management System (SFM).
- Forest Stewardship Council (FSC). Weyerhaeuser BCCG is participating in developing the BC Regional Standards for FSC.

All TFL 39 timberlands operations will be certified to the ISO 14001 and CSA Z809 standards by the end of 2002.

Weyerhaeuser's BC coastal sawmills will also be certified to ISO 14001 by the end of 2002.

"Chain of Custody" certification will be achieved by 2002 for all BCCG timberlands and manufacturing facilities to assure customers that products originated in a Certified Forest.

Progress to date (March 2001) within TFL 39 includes:

- In May 1999, North Island Timberlands (includes Block 2 of TFL 39) attained certification status under both CSA Z809 Sustainable Forest Management (a first in Canada) and ISO 14001 (only the fourth forestry operation in North America to achieve this).

- In February 2000, North Island Timberlands and Chemainus Sawmill Division attained Chain of Custody certification to enable tracking of wood from forest to customer.

- In September 2000 Chemainus Sawmill Division attained ISO 14001 certification.

- In November 2000, Port McNeill Timberlands (includes Blocks 3, 4 and 7 of TFL 39) attained ISO 14001 certification.

- As of March 2001, Queen Charlotte Timberlands and Stillwater Timberlands are completing the process leading towards recommendation for ISO 14001 certification.

- All major Weyerhaeuser BC Coastal Group manufacturing facilities have attained Chain of Custody registration.

Major components of the ISO and CSA certification include:

- The ISO 14001 EMS provides a framework for actively managing environmental risks. Policies, procedures, responsibilities, monitoring and training are all clearly defined.

- The CSA Z809 Sustainable Forest Management Plan (SFM) provides a framework of forest management goals, criteria, indicators and objectives. The criteria are based on those developed by the Canadian Council of Forest Ministers and are aligned with the internationally recognized Montreal Process criteria and indicators for Sustainable Forest Management. The specific SFM indicators and objectives for each operation are developed through input from the local community.

- The achievement and maintenance of both ISO and CSA standards are verified by annual third party audits.

- Both ISO and CSA procedures are based on processes that deliver continual improvement.

CSA Z809 certification applies to a defined forest area. Weyerhaeuser will work with the MoF, and the Small Business Forest Enterprise Program (SBFEP) to encourage consistency in environmental programs and management systems.

4.0 WORKING WITH THE COMMUNITY

Relationships between Weyerhaeuser and local communities are important. Forests contribute significantly to the social, economic and recreational opportunities of these communities.

4.1 Social and Economic Interests

The significance of the contribution of the TFL 39 forests to both local economies and the provincial economy is indicated by statistics on direct employment and government revenues.

Timber harvesting in TFL 39 results in more than 4 500 direct jobs in timber harvesting, silviculture, transport, processing and government. The approximately 1 500 jobs in harvesting and forestry are particularly important to a number of smaller coastal communities including Sandspit, Queen Charlotte City, Skidegate, Port Clements and Masset in the Queen Charlotte Islands, Port Hardy, Port McNeill, Sayward and Campbell River on Vancouver Island and the Sunshine Coast.

Approximately 50% of the logs from TFL 39 go to company sawmills on Southern Vancouver Island and the Lower Mainland. A further 25% are directed to the Pacifica paper mill in Powell River. Much of the remaining log volume goes to sawmills on Vancouver Island (some as part of fibre supply agreements) or to sawmills and cedar shake mills in the Vancouver/Fraser Valley area. These external sales are offset to some extent by mill purchases as logs are trade to better suit mill requirements.

Using average coastal industry figures from the Price Waterhouse Coopers report, “The Forest Industry in BC 1999”, the TFL 39 timber harvest generated over $250 million in total government revenues in 1999. This includes $88 million in direct government revenues (from stumpage, rents and corporate taxes).

Objectives include supporting the communities in which operations are located, providing employment, recreational opportunities and educational activities.

Community economic and employment strategies include:

- Local Weyerhaeuser managers are responsible for developing relationships with local communities, including First Nations.

- Moving towards achieving a work force that broadly reflects the demographics of local communities in which operations are located.

- Weyerhaeuser will continue the practice of managing TFL 39 on a Block basis in response to local economic concerns including economic opportunities. Block contributions are defined for the MP #7 AAC. It is recommended the same process is continued in MP #8.

- Weyerhaeuser signed a new multi-year agreement for FRBC funding in early 2000. An emphasis of this agreement is on local employment and a substantial proportion of this funding occurs in local communities.

4.2 Community and Stakeholder Involvement

The objective is to provide ready access for public input and stakeholder involvement in our management process.

Strategies include:

- Public review of operational plans (Forest Development Plans) and Management Plans. Local and other involved public interest groups, local governments, First Nations and interested individuals are identified and advised of opportunities for input to the various planning processes.

- Development of public involvement and stakeholder participation as part of the CSA Sustained Forest Management System. In TFL 39, Community Advisory Groups are active at North Island Timberlands, Stillwater Timberlands and Port McNeill Timberlands, and a similar form of public involvement will commence at Queen Charlotte Timberlands during the next two years. Membership of the community advisory groups is from a broad cross-section of the communities and the regular meetings provide both input for local management issues and opportunities for all to learn about forest management and how these activities relate to the communities.

4.3 First Nations

Economic

The objective is to develop enduring business relationships with First Nations.

Strategies include:

- The development of business relationships and opportunities with First Nation's groups in TFL 39. These relationships will be based on sound business practices. The current focus is on capacity building (training – development of skills).

- First Nations partners are included in the FRBC Multi-Year Agreement. At the time of writing this report, First Nations partners in TFL 39 include the Sliammon, Kwakuitl Laich-Twil-Tach, Musgamagw, Heiltsuk, Quatsino and Haida.

Consultation

The objective is to encourage participation of First Nations in plans and operations. The intent is to improve communications and understanding by all involved and hence identify and solve concerns well in advance of planned operations.

Strategies include:

- Weyerhaeuser encourages review of operational plans. This includes sending invitations to meet; follow-up phone calls, and meetings to share information. The FDP text and maps are made available for review and comment and replies are sent in response to comments received. The following table is a summary of the First Nations Groups that are consulted.

Timberlands Operation	TFL 39 Block	First Nations Group
Stillwater	Block 1	Klahoose
		Sliammon
		Sechelt
	Block 5	Holmolco
		Kwakiutl Laich-Kwil-Tach Nations Treaty Society
North Island	Block 2	Kwakiutl Laich-Kwil-Tach Nations Treaty Society. Represents the following groups with traditional territory in Block 2:
		Campbell River
		Cape Mudge
		Comox
		Tlowitsis Mumtaglila
Port McNeill	Blocks 3&4	Da'Naxda'Xw
		Gwa-Sala Nakwasada-xw
		Gwawaenuk
		Kwakiutl
		Kwicksutaineuk
		Mamalilikula Que-Qwa-Sot Enox
		Mumtagila
		Musgamagw Tsawataineuk
		Namgis
		Quatsino
		Tlatlasikwola
		Tlowitsis Mumtagila
Timberlands Operation	**TFL 39 Block**	**First Nations Group**
Port McNeill		Tsawataineuk
	Block 7	Heiltsuk
		Oweekeno
		Nuxalk
Queen Charlotte	Block 6	Haida

- First Nations representatives are invited to participate in Public Advisory Groups and other public review and input initiatives.

- First Nations are included in the mail-out list for public review of MP #8. Specific invitations were sent to discuss the SMOOP and the draft Management Plan.

An issue identified in the SMOOP for the Haida in the Haida Gwaii/Queen Charlotte Islands was the sustainable supply of redcedar for ceremonial uses. Queen Charlotte Timberlands provided assistance to the Council of Haida Nations in an inventory of ceremonial cedar in 1999. A more systematic survey (supervised by the MoF) of lands both in TFL 39 and in the Queen Charlotte

Islands Timber Supply Area is scheduled for completion later in 2001. It is expected that results of this survey will assist in directing further information gathering and planning efforts. Weyerhaeuser will continue to cooperate in this initiative.

4.4 Cultural Heritage Sites

Objectives are to protect known sites of historic and cultural significance and to account for such sites in strategic analysis.

Strategies include:

- Review operational plans with local people to identify areas of potential interest, where cultural resources may be affected by forest development.

- Conduct assessments and implement management to protect cultural resources in accordance with the Forest Practices Code and the Heritage Conservation Act. This includes working with First Nations, the MoF and the Archaeology Branch (Ministry of Small Business, Tourism and Culture) to identify the appropriate assessment procedures.

- Review available inventories and operational information, by December 31, 2004, to update and refine where possible the accounting for cultural heritage sites in the MP #9 analysis.

4.5 Other Forest Users

Other resource users include trappers, guides, tour operators and other recreation businesses and plant and mushroom gatherers.

Weyerhaeuser interacts and responds to the various forest users in a number of ways:

- Input is sought from recreation groups and the public when revising recreation inventories.

- Informal discussions are held with groups and individuals who may have concerns regarding our nearby activities.

- Standard operating procedures have been developed by some operations for communicating with the public and with special interest groups. An example is the communications between North Island Timberlands (Block 2) staff and local caving groups with regards to operations in karst areas.

- Opportunities to review Forest Development Plans (FDPs) and Management Plans are advertised in local papers. Mailing lists are also maintained and used to notify interested people and groups of opportunities to review plans. These include those identified by the MoF as being involved in a specific area or issue; for example guiding or recreation use.

The MoF is informed of any input received and any resulting changes to FDPs or the MP.

Harvesting of salal, mushrooms and tree boughs occurs on an informal basis. Operations respond to requests, providing maps and locations of timber harvesting activity.

Registered trapper and guide outfitter licences are shown in the map atlases attached to the MP.

4.6 Public Review for MP #8

Appendix 1 (SMOOP) includes a summary of results for the first two stages of public review for MP #8, comments on MP #7 and review of the SMOOP.

A written report on the results of stage 3, the public review of the draft Management Plan, has been submitted to the Manager of the Vancouver Forest Region. A summary of this report is included in Appendix IX.

4.7 Public Review Strategy for MP #9

The current TFL 39 Licence Agreement (dated March 01, 2000) describes the steps and schedule for developing a Management Plan. The schedule for developing MP #9 begins with a review of MP #8, to occur by October 31, 2004. At that time, a Public Review Strategy for MP #9 will be prepared based on direction from the Regional Manager of the Vancouver Forest Region.

5.0 INTEGRATED RESOURCE MANAGEMENT

5.1 Water Resources and Habitat Protection

Objectives are to minimize our impact on water resources and to respect riparian values associated with streams, lakes and wetlands.

Strategies include:

- Work closely with regional and community water boards regarding practices and standards in community watersheds. The five community watersheds in TFL 39 include the Haslam/Lang, Jeffered and Silver watersheds in Block 1, Newcastle Creek in Block 2 and the Honna Watershed in Block 6.

- Coastal Watershed Assessment Procedures have so far been applied to more than 40 watersheds and basins in TFL 39. Updates are completed as required and additional CWAPs will be undertaken as requested by District Managers.

- Standard Operating Procedures have been developed and are maintained for road construction, maintenance and deactivation.

- Aerial yarding systems (helicopter) have increasingly been used in sensitive areas to minimize road density.

- Maintain standard operating procedures for work shutdowns for environmental and safety reasons.

- Develop and implement road deactivation plans and further reduce erosion through dry seeding, or hydroseeding and planting. Utilize FRBC funding for watershed restoration work.

- Weyerhaeuser is participating in the Theodosia Adaptive Water Management Plan (Block 1 of TFL 39).

5.2 Soil Conservation

The overall objective is to sustain the productivity of the landbase.

Strategies include:

- Maintain Standard Operating Procedures for road construction, maintenance and deactivation.

- Terrain stability field assessments (TSFAs) are conducted on steep and sensitive sites.

- Forest practices reflect the sensitivity of the soil.

- Internal and external audits on road building and harvesting practices.

Concern has been expressed that variable retention might increase road requirements. There will be situations with increased road requirements and others with reduced requirements. It is expected that in sum they will tend to offset one another. For example, there has been an increase in helicopter harvesting (and hence fewer roads) on steeper terrain. Significant increases in roads are not expected on flatter terrain because of gains in reduced adjacency constraints.

5.3 Biodiversity

The broad objective is to sustain healthy biologically diverse forests.

Strategies include:

- Substantial areas of forest throughout the landscapes in TFL 39 are reserved. Approximately 26% of the productive forest is reserved as inoperable, as sensitive sites (unstable soils and riparian areas) and for non timber values such as wildlife and recreation. In addition there is a large area of forest (166,000 ha for all of TFL 39) that is retained as it is non-productive for timber production purposes.

- The Forest Project (refer to section 3.1).

  - Old-growth stewardship zones include additional reserves of old-growth forest. Variable retention ensures that a diversity of forest structure, including snags, wood debris and live trees of various sizes, is well distributed across the forest landscape.

  - Variable retention and stewardship zones provide additional means and flexibility for achieving and often exceeding government landscape objectives for old seral representation and Wildlife Tree Patches.

- The development and use of performance based procedures will be encouraged. Refer to the discussion of the Block 2 Enhanced Forest Management Pilot Project in section 8.12.

- Ecosystem mapping for most of TFL 39 will be complete within 2 years. This mapping has been funded by FRBC and is to the site series level at a scale of 1:20,000. Refer to section 8.9. The site series information will provide assistance in landscape unit planning and operational planning.

- Monitoring and adaptive management is an integral part of the strategy as there is uncertainty about the outcomes of new practices (variable retention). Ongoing efforts in this field are overseen by a working group with members from government agencies, the University of British Columbia and Weyerhaeuser. A criterion and indicators of success have been defined. The monitoring (evaluation) includes sampling of forest structure and species occurrence (commenced in 1999) and installation of field comparisons of variations in variable retention (e.g. amount and distribution of retention). Refer to section 3.1.3 for more detail.

5.4 Wildlife Habitat

Objectives are to minimize the impact of activities on wildlife habitat and to not knowingly jeopardize rare, endangered or threatened species.

Strategies include:

- Track rare and endangered species. Identified wildlife species are listed by Forest District in the Managing Identified Wildlife Guidebook (February 1999). The BC Conservation Data Centre (MoELP) maintains lists of rare vertebrates, vascular plants and plant communities by Forest District. These lists may be accessed at the Conservation Data Centre web site, www.clp.gov.bc.ca/rib/wis/cdc/index.htm.

- It is recognized that the old growth stewardship zones and reserves for other reasons (e.g. inoperable areas, riparian and wildlife areas and sensitive soils) will not address all wildlife needs. These approaches might be described as coarse filter approaches.

  A fine filter approach is necessary for species where the coarse filter is inadequate. Such additional measures will be applied as they are identified. Examples include the “Identified Wildlife” discussed below.

- Develop management prescriptions for marbled murrelets goshawks and other identified wildlife according to the procedures set out in the Managing Identified Wildlife Guidebook (February 1999). Sites including nests that are located as part of the operational assessment process will be identified to district MoELP and MoF staff. Management prescriptions are then developed and included in operational plans. Wildlife tree patches and variable retention provide additional flexibility for providing protection.

- Develop and incorporate landscape level objectives for biodiversity including wildlife habitat. This will be achieved as part of the landscape unit planning process (refer to section 7.11).

- Apply stand treatments in specific situations to enhance and improve habitat. These treatments will be based on an assessment of benefits (habitat and timber) and cost. Recent examples include spacing and pruning treatments in the Benson Creek Watershed (Block 4) to improve deer and elk habitat and trials in restoration of riparian habitat in Block 2.

- Review grand-parented ungulate winter ranges in Blocks 2 and 4 with MoELP and MoF District staff prior to October, 2003.

- With District MoELP staff, refine Goat winter ranges in Blocks 1 and 5 by 2002.

5.5 Visual Impact

The objective is to reconcile where possible the harvesting of trees with the visual landscape.

Weyerhaeuser's strategy is to:

- Maintain visual landscape inventories. New inventories were completed during MP #7. Refer to section 8.6.

- Incorporate visual landscape objectives in plans and operations.

- Work with MoF specialists to manage for visual landscape objectives more efficiently. This includes improved visual landscape design (assisted by variable retention) and management practices to reduce the time for achieving visually effective green-up.

5.6 Recreation

The objective is to integrate forest management activities with recreation values.

Weyerhaeuser's strategy is to:

- Continue to work with the MoF and local residents to develop appropriate prescriptions for public access to specific areas. Issues include road deactivation (environmental risk), road maintenance and safety.

- Cooperate with commercial tour operators where access is required.

- Develop and maintain recreation sites and trails in concert with the MoF and subject to funding.

- With the MoF, develop strategies for recreation sites and trails and define objectives for management of these features.

- Continue to provide recreation maps showing recreation areas, roads and rules of access.

- Continue to cooperate with MoF and local caving groups in managing and protecting sensitive caves and Karst resources. This includes undertaking surface inventories in Karst areas prior to development and utilizing the existing MoF cave/karst management handbook for the Vancouver Forest Region as an interim measure until the new management guidelines have been finalized and approved for general use..

6.0 TIMBER RESOURCE MANAGEMENT

Major objectives include:

- Manage the forest land in TFL 39 for the sustainable production of wood and fibre.

  - Section 6.1.1 describes the analysis that projects long-term harvest levels and provides information to assist the Chief Forester of the province in determining the harvest level for the next five years (allowable annual cut).

  - Section 6.2 includes strategies for reforestation after harvest.

- Maintain and/or enhance the productivity of forests.

  - Section 6.2 outlines strategies for re-establishing and managing the new forest (after harvest).

  - Section 6.3 describes strategies for protecting the forest

6.1 Timber Harvesting

6.1.1 Analysis and Allowable Cut

6.1.1.1 Analysis Procedure

The process of providing information to assist the Chief Forester in determining an Allowable Annual Cut (AAC) for the next five years involves three main components:

- Information Package. Refer to Appendix II for details.

The Information Package documents the assumptions and describes the modeling procedures that are used in the Timber Supply Analysis. This includes details on:

- Options that will be tested in the analysis
- Net-downs that will be applied to derive the Timber Harvesting Land Base (THLB)
- Silvicultural and yield (forest growth)
- Harvesting
- Integrated resource management

- Timber Supply Analysis (TSA). Refer to Appendix III for details.

  The TSA examines alternative timber supply strategies by incorporating assumptions on land base, productivity, forest management and integrated forest management in projecting forest growth and timber harvest over 250 years.

  The TSA includes analysis of a number of options (refer to Table 6.1) to test the impact of various timber supply issues and to provide information on the sensitivity of timber supply to uncertainties regarding the available land base, forest growth and integrated forest management.

- Twenty-Year Plan (TYP). Refer to Appendix IV for details.

  The TYP is intended to show the spatial feasibility of initial harvest levels proposed in the Timber Supply Analysis.

  Harvest projections were developed for the twenty-year period 2001 to 2020 using automated harvest planning software developed by Weyerhaeuser. The software places harvest blocks at specific spatial locations in such a way as to meet volume targets and comply with all applicable constraints.

Both analyses, the TSA and the TYP were conducted separately for each of the six working circles. Refer to Table 6.2. Harvest schedules are summed across working circles to provide a harvest schedule for TFL 39.

The Base Option is central to the analysis. It models current forest management guidelines and practices. This includes estimates of current net-downs for sensitive sites (unstable soils and riparian areas), inoperable areas and areas reserved for non-timber values (e.g. wildlife and recreation). It also includes a portrayal of current management practices for landscape biodiversity, visual landscape and community watersheds as well as current inventory estimates and standard practices for forest management and for projecting future yields. The base option in this analysis includes the Forest

Project, incorporating draft stewardship zones as a basis for assumptions on timber supply impacts of variable retention.

In the TSA, the base option harvest schedule is a “base" against which the harvest schedules for all other options are compared. The base option assumptions also form the basis for the Twenty-Year Plan.

The following table summarizes the TSA options and how they vary from the base option.

Table 6.1 Summary of Timber Supply Analysis Options

Issue	Option	Description of Variance from the Base Option
	1	Base Option
Forest Project	2	Excludes Stewardship Zones and Variable Retention
Variable Retention	3	Increased area impact of VR from 5% to 15% in Timber Zones and from 7.5% to 17.5% in Habitat Zones
Landscape Biodiversity	4	Includes early and mature + old seral constraints
	5	Applies draft biodiversity emphases for old seral constraints
Visual Landscape	6	Separate runs include the mid-point and the lower end of the range for the maximum area below Visually Effective Green-up.
Economic Operability	7	Includes mature forest classified as “currently uneconomic”
Sensitivity to Timber Harvesting Land Base	8	THLB increased by 5%
	9	THLB decreased by 5%
Block specific land-base issues	10	Block 1 – exclude the Confederation Lake Park and Duck lake areas.
	11	Block 5 – exclude the Phillips Lake area.
	12	Block 6 – Exclude the Haida Declared Protected areas.
	13a	Block 7 – Exclude the Koeye Watershed and Fougnar Bay
	13b	Block 7 – exclude marginal areas
	13c	Block 7 – A more gradual transition from MP #7.
	13d	Block 7 - Exclude the Koeye Watershed, Fougnar Bay and marginal areas.
Inventory and growth rate assumptions	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	Inventory site indexes.
Minimum Harvest Ages	19	Increase minimum harvest ages by 10 years.

6.1.1.2 Results

Base Option

The base option TFL 39 harvest schedule gradually declines from an initial harvest of 3.66 million m^3 /year, reaching a harvest level close to the long-term sustainable level of 3.33 million m^3/year after 50 years. This long-term harvest level is 9% lower than the initial harvest level.

For the total TFL, the base option harvest schedule is similar to that in the MP #7 analysis. Refer to Section 9 for a discussion of the major changes in assumptions between MP #7 and MP #8.

Timber Supply Analysis – Options

Initial harvest levels are robust across the options analyzed. Only Option 4, in which early and mature plus old seral constraints are applied, has a significant impact on first period harvest levels. However, current government policy is that these constraints are applied only if they do not negatively impact timber supply.

Several factors are shown to have a significant effect on medium-term and/or long-term timber supply. In all cases the TFL 39 harvest can adjust gradually (at no more than 10% change per decade) from current harvest levels to the higher or lower (compared to the base option) medium-term and long-term harvest levels. These factors include:

- +-10% sensitivity analyses on mature volume (note that mature volume estimates are supported by recent inventory audits).
- +-10% sensitivity analyses on second-growth yield projections.
- +-5% sensitivity analyses on the timber harvesting landbase.
- Inventory site index estimates compared to the revised company biophysical site index estimates.
- Estimates of the impact of variable retention and old-growth stewardship zone reserves.

Options that examined visual quality requirements, draft biodiversity emphases old seral constraints, older minimum harvest ages, restricted availability of timber classified as uneconomic and specific exclusions in Block 1 and Block 5 had a small impact on projected timber supply.

Option 12 shows that the Haida Declared Protected Areas contribute 11% of the harvest in Block 6. This is the basis for the recommended partition of the Block 6 contribution to the TFL 39 AAC. The impact is less than indicated by productive forest area because these areas are significantly coincident with draft Old-Growth Stewardship Zones.

The impact of excluding the Koeye Watershed from Block 7 (option 13A), a long term harvest reduction of 14.5% (11 000 m^3/year), is substantially less than the comparison in MP #7. Again this is because the Koeye Watershed is classified as a draft Old-Growth Stewardship Zone in MP #8.

Option 13C [for Block 7], with harvest levels for the first four 5-year periods of 150 000, 125 000, 110 000 and 105 000, provides a more even transition from MP #7 (195 000) than the base option commencing at 130 000 m^3/year. Option 13C is the basis for the recommended Block 7 AAC contribution of 150 000 m^3/year.

Twenty-Year Plan

The results support the harvest levels obtained in the first twenty years of the Timber Supply Analysis. The spatial harvest schedules are equivalent to or

greater than the TSA base option harvest projections (option 13C for Block 7) for the 20 years.

6.1.1.3 Allowable Annual Cut Recommendations

AAC recommendations include:

- A TFL 39 AAC for MP #8 of 3 680 000 m^3.
- Block contributions as described in Table 6.2.
- A 125 000 m^3 partition to the Block 6 (QCI) contribution is included for harvest in areas classified as Haida Declared Protected Areas.

Table 6.2 Recommended AAC Contributions for MP #8

	Recommended Block Contributions to MP #8 AAC (000 m^3)		Recommended AAC for TFL 39, MP #8 (000 m^3)
	Block Partition	Total Block Contribution	
Block 1		550	
Block 2		1 335	
Blocks 3&4		400	
Block 5		95	
Block 6	Haida Declared Protected Areas – 125 Balance of Bk. 6 – 1 025	1 150	
Block 7		150	
Total TFL 39		3 680	3 680

It is recommended that the partition for deciduous areas is not applied in MP #8. With Weyerhaeuser's purchase of Coast Mountain Hardwoods (closed in early October 2000) there will be an increased emphasis on utilizing alder areas that are not retained for biodiversity or other non-timber values (refer to Section 6.2.5). The recommended increase in the Block 1 contribution to AAC is based partly on accessing volumes in deciduous areas (the analysis assumed that half the net deciduous area after netting down for other values is available for harvest).

Areas of deciduous stands that are harvested will be monitored during MP #8.

The contribution of crown (Schedule B) lands to the AAC is based on the proportion of productive forest land that is Schedule B. In the 1995 inventory used in the MP #8 analysis:

- Total productive forest area 548 240 ha
- Schedule B productive forest area 475 061 ha

- Hence the Schedule B prorate (share of the AAC) is 475 061/548 240

  = 0.867

Harvest performance by Block and Block 6 partitions will be included in the TFL annual report.

The recommended AAC for TFL 39 and the contributions for Blocks 2, 3&4, 5 and 6 closely follow the analysis results for MP #7 and the strategy of a gradual change in harvest over time towards the long term harvest level. Refer to the comparison of MP #7 AAC contributions, harvest rates from the MP #7 analysis and the recommended Block contributions for MP #8 in Table 6.3

Table 6.3 Comparison of MP #7 Harvest Rates and MP #8 Recommended Harvest Levels

	Volumes in (000 m^3)			
	MP #7 AAC	MP #7 Base Option Harvest Levels		Recommended AAC for MP #8
		1998-2002	2003-2007	
Block 1	445	475	500	**550**
Block 2	1 335	1 349	1 328	**1 335**
Blocks 3&4	415	420	420	**400**
Block 5	100	97	94	**95**
Block 6	1 210	1 170	1 120	**1 150**
Block 7	195	184	172	**150**
Deciduous	40			
Total TFL 39	3 740	3 695	3 634	**3 680**

The recommended AAC contribution for Block 7 has been decreased compared to that indicated in the MP #7 analysis. The recommended 150 000 m^3/year allows for a relatively even transition from MP #7 harvest levels to lower future harvest levels resulting largely from classification of the Koeye Watershed as an Old-Growth Stewardship Zone.

The recommended AAC for Block 1 has been increased to 550 000 m^3/year to better reflect harvest opportunities in the large area of maturing second-growth in Block 1.

In summary:

- The AAC recommendations continue to follow the strategy of gradually adjusting towards the estimated long-term harvest.

- These initial harvest levels are robust across the options analyzed. Only one option, in which early and mature plus old seral constraints are applied, has a significant impact on starting harvest levels. Current government policy, however, is to not adopt these requirements if they are adverse to timber supply.

- The Twenty-Year Plan supports the AAC recommendations.

6.1.1.4 Allocation of the Recommended AAC

Allocation of Recommended AAC (m^3)	
SBFEP[(1)]	162 218
Tenure transfer – 5%[(2)]	152 522
Weyerhaeuser	3 365 260
Total	3 680 000

[(1)] The SBFEP share of the AAC is fixed at 162 218 m^3 in the License Agreement.

[(2)] TFL 39 was transferred from MacMillan Bloedel to Weyerhaeuser in November 1999. Under section 56 of the Forest Act the licensee (company) AAC attributable to crown land is reduced by 5% following a tenure transfer. This amounts to 152 522 m^3 for TFL 39.

6.1.1.5 Contractor Portion of AAC

The TFL Licence Agreement requires that 50% of the Crown contribution to the company AAC must be harvested by independent contractors.

This includes the SBFEP and the tenure transfer portions of the AAC. A preliminary estimate of the contractor portion of the company AAC is as follows:

1) Crown contribution to the AAC = 3 680 000 * 0.867 = 3 190 560

2) Subtract the SBFEP and 5% transfer allocations from the total AAC and from the crown contribution:

   3 680 000 – (162 218 + 152 522) = 3 365 260

   3 190 560 – (162 218 + 152 522) = 2 875 820

3) Divide the net crown contribution by the company AAC and multiply by 50%

   (2 875 820 / 3 365 260) * 50% = 42.7%

This preliminary calculation assumes the recommended AAC and the 5% reduction due to the tenure transfer.

Weyerhaeuser will ensure this proportion of the cut is harvested using both full and phase contractors.

As written in regulation, all work greater than six months duration, is done under contract.

6.1.2 Harvest Strategies

6.1.2.1 Working Circles

Harvest levels for individual blocks of TFL 39 contribute significantly to various communities on the BC Coast.

Weyerhaeuser will continue the practice of managing TFL39 on a Block basis in response to local concerns including employment opportunities. Harvest for each working circle (Block 1, Block 2, Blocks 3&4, Block 5, Block 6 and Block 7) will be reported in the TFL 39 Annual Report.

6.1.2.2 Small Business Forest Enterprise Program [SBFEP]

The AAC for TFL 39 includes 162 218 m^3 that is allocated to the Small Business Forest Enterprise Program (SBFEP).

The objective is for SBFEP harvest operations to approximate the forest profile.

The strategy includes reviewing candidate SBFEP cutblocks with MoF Small Business Foresters and including the cutblocks in Forest Development Plans.

Weyerhaeuser recognizes that there are different options for managing the allocation of harvest volume to SBFEP. Alternative options in two Blocks have been discussed and will continue to be considered during MP #8. They include:

- Examining options for trading all or part of Weyerhaeuser's harvest allocation in the Strathcona Timber Supply Area for all or part of the SBFEP allocation in Block 2.

- Working with the Island Community Stability Initiative in the Queen Charlotte Islands to transfer all or part of the TFL, Block 6 allocation of SBFEP to the QCI Community Forest. This requires defining an appropriate forest area and then separating it from the TFL.

Any changes to the management of the SBFEP in TFL 39 will be done in consultation with the MoF and will be subject to approval by the MoF.

Weyerhaeuser is on schedule to achieve ISO and CSA certification for all TFL 39 operations by the end of 2003 (refer to Section 3.2). The first, North Island Timberlands, received certification in 1999.

Forest certification applies to a defined forest area, including SBFEP operators as well as Weyerhaeuser. Consistency in environmental programs and management systems is required for certification. Weyerhaeuser will

work with the MoF and the SBFEP in each operation to meet these requirements.

6.1.2.3 Harvesting Systems and Procedures

There are essentially three approaches to harvesting: ground-based machines, cable and aerial. All harvesting system options can be used in partial cutting operations. The choice of system is based on slope, terrain conditions, yarding/skidding distance and piece size. The importance of other resources, accessibility and road costs, future management considerations and the necessity to keep production costs within economic limits are other essential factors in determining harvesting systems. The actual methods to be used for each opening are prescribed in the Silviculture Prescription.

Harvest systems have been classified as conventional and non conventional. Conventional systems comprise all systems except the true aerial and longline yarding systems. The mature (greater than age 130 years) forest inventory has been classified according to broad economic operability class (uneconomic, marginally economic or economic) as well as conventional or non conventional systems. The operability inventories have been reviewed and refined during MP #7.

The TFL 39 Annual report will report on harvest volumes classified according to the current operability classification.

The results of the Twenty-year Plan (Appendix IV) show that for TFL 39, the non-conventional and marginal mature timber types become less significant over the next 20 years as harvest occurs in these types and substantial volumes of younger conventional second-growth become available for harvest.

Variable Retention and Cutblock Harvest Profile

Concerns have been expressed regarding the potential to high-grade stands with variable retention.

Weyerhaeuser is applying variable retention to achieve both economic and ecological values. Stands are not high graded (i.e., leaving only low value trees with no plans for regeneration). A variety of trees and groups of trees are retained in a landscape. Stands are regenerated (Section 6.24) and forest health issues (Section 6.3) attended to. Within this framework there are opportunities to retain trees with high habitat and ecological values but poor timber values. Refer to Section 5, “Partial-Cutting to Avoid Highgrading”, in the "Company Guidelines for Variable Retention."

Opportunities for Low Impact Timber Harvesting

Large areas have been reserved from logging because of difficult logging chance, protection issues and non-timber values. Recent developments provide opportunities for accessing some of this timber.

Individual tree and small patch logging by helicopter can enable removal of some trees without interfering with primary protection (soils and riparian) or non-timber (wildlife, recreation etc.) values. Developments include a harvesting technique for single stems, whereby a helicopter removes a cut-and-limbed tree without it falling to the ground.

North Island Timberlands (Block 2) has initiated an investigation of the opportunities for using such harvesting methods in constrained areas. Two pilot areas (in terrain constrained by high visual values and sensitive soils) have been completed.

Further development of harvest opportunities in constrained areas is planned for MP #8. Such projects will be developed with MoF and MoELP staff and will only occur where primary site values will not be adversely impacted

6.1.2.4 Infrastructure and Access Development

Locations of new log handling facilities, roads, and bridges, etc., are shown in operational plans.

Dryland Sorts and Log Dumps

Installations will be maintained to ensure conformance with environmental protection regulations. No new dryland sorts or log dumps will be built unless an environmental and heritage site assessment has been made and the appropriate approvals, including those for proposed ameliorative actions, received.

Road Building and Maintenance

The annual road building and maintenance plan will be reviewed at the Forest District as part of the Forest Development Plan Process. All permitted roads and bridges will meet the requirements of the Forest Road Regulations.

Where existing non-permitted roads are required for harvesting, they will be permitted and brought up to standard. Other non-permitted roads not required for harvesting will be brought up to standard on a priority basis based on discussions with local MoF and MoELP staff and according to the availability of FRBC funding.

Site Restoration

Roads and landings will be maintained or deactivated according to the permits and plans approved. The decision will be based on road status, evaluation of environmental risk, and further use. All decisions will be based on the prescription and/or plans approved for the specific sites.

Commercial and Public Use of Roads and Facilities

The public has free right of access and use of Weyerhaeuser roads on the TFL subject to safety.

Weyerhaeuser will enter into agreements, including clearly stated charges and responsibilities, with other commercial operators wanting to use Weyerhaeuser roads and infrastructure.

6.1.2.5 Second-Growth Harvest Strategy

The MP #8 harvest strategy includes an earlier transition from mature (old-growth) timber to second-growth than shown in earlier management plans.

The current second-growth harvest is approximately 20% to 25% of the TFL 39 harvest. This is expected to grow to more than 50% of harvest within 25 years. The harvest transition varies by Block according to harvest history. It is most advanced in Block 1 where second-growth harvest currently comprises more than 50% of the cut. Second-growth harvest is also significant in Blocks 3&4 and is beginning to increase in Blocks 2 and 6. Blocks 5 and particularly 7 have more recent harvest history; for Block 7 the mature harvest will dominate for more than 50 years.

The increased focus on second-growth harvest reflects the reduced harvest opportunities in mature timber, spatial constraints in second-growth areas and a goal of reducing the costs of transition to the spatial forest pattern implied by recent regulations.

- 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 intended that initially, “minimum harvest ages” based on calculations of financial rotations in recent stand level analyses be used as guide. These suggested first-pass “minimum harvest ages” vary between 40 and 70 years depending on site productivity and species as shown in the following table. In practice, the first pass harvest entry age will vary with stand situation (timber type, silvicultural system etc) and markets. In some situations harvest ages may be younger than those in the table. Later harvest passes in similar aged timber will by definition occur at older ages.

Species Association	Site Index Range (m)	Minimum Harvest Age Guidelines (years)
Douglas-fir	<27	70
Douglas-fir	>=27	50
Western Hemlock	<27	60
Western Hemlock	>=27	40

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 strategy 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.

The current age class distributions in Blocks 1, 2, 3&4 and 6 include substantial areas that may contribute candidate first harvest pass areas. Refer to the following Table.

Block	Timber Harvesting Landbase (ha)		
	Total	Age Class 61 plus (second-growth)	Age Class 41 to 60
Block1	70 100	30 200	9 200
Block 2	117 300	6 200	12 300
Blocks 3&4	42 300	5 500	6 500
Block 6	119 000	6 200	9 100

The second-growth harvest strategy will assist in smoothing the forest age class distributions as well as spatially dispersing the harvest.

Commercial Thinning

Relatively little commercial thinning is forecast to occur during MP #8.

Thinning is not expected to increase yield, but may however, contribute towards achievement of non-timber management objectives and may provide medium-term harvest opportunities in deferred areas. More specifically these situations include:

- Thinning before financial rotation where removing less than 25% of the stand volume from below (the smallest trees) is practical.

- Thinning if final harvest is delayed beyond financial rotation. For example, visual landscape and recreation areas that have a restrictive rate-of-cut constraint. The thinning should remove the maximum value contingent on meeting cover requirements, windfirmness, etc.

- Thinning to meet a non-timber management objective such as the creation or enhancement of wildlife habitat. In addition, thinning in areas otherwise reserved, to accelerate development of old-growth characteristics as part of an old-growth recruitment strategy.

Thinnings should be financially attractive. If not, then costs should be offset by strategic harvest flow benefits.

6.1.3 Fibre Supply Agreements

As outlined in Section 3.0 of the Objectives and Strategies for Employment and Economic Opportunities (Page 47 of Appendix I), the Weyerhaeuser BC Coastal Group sold its Harmac pulp mill in 1994 and exited the paper business by selling the Powell River and Port Alberni mills in early 1998. Weyerhaeuser has agreements with the resultant companies, Harmac Pacific and Pacifica to supply fibre to these mills. It is Weyerhaeuser's intention to continue to supply fibre in the form of both logs and chips to Harmac Pacific and Pacifica pursuant to these fibre supply agreements.

6.2 Establishing and Managing the New Forest

6.2.1 Silvicultural Objectives

Silvicultural objectives are to:

- Implement the silvicultural system best suited to achieve objectives for each harvest area according to regulations, land use designation, forest values, silvicultural needs, and economic feasibility.

- Regenerate all harvested land promptly (Rapid Early Establishment Strategy) with appropriate species considering both silviculture characteristics and economic values.

- Set stocking targets to provide a high, sustainable yield of timber.

- Treat the newly regenerated forest as needed to control or encourage understory vegetation or to reduce tree density to meet special habitat goals.

- Prune, fertilize, or thin the new forests when these treatments are economically advantageous or when warranted to achieve non-timber values.

- Develop and implement a management strategy for hardwoods.

- Vary the scale and intensity of silviculture treatments considering:
  - likelihood and magnitude of growth or value response,
  - magnitude of impact on and importance of other values present,
  - availability of funding.
- Minimize losses from wind damage through assessments of susceptibility, cutblock design and appropriate management practices.

The following sub-sections describe the silviculture strategy in the context of these objectives.

6.2.2 General Silvicultural Strategy

Weyerhaeuser accepts the responsibility for establishing and managing the new forest as set in law and in conformance with the TFL Agreement and the approved objectives of management listed above.

The economic objective is to realize the highest net value of timber from the forest on a sustainable basis while meeting the requirements for protection and/or conservation of the other forest-based resources and values.

Volume per Hectare

The primary criterion for the future crop is merchantable volume yield per hectare. In general, higher volume is obtained with more complete stocking. Analysis of permanent sample plot data and in-depth reviews of trends in markets and technology have led to the conclusion that it is unrealistic to target specific log or tree sizes. Rather, it is better to allow tree size to be dictated by management or natural constraints with the expectation that technology will exist to make best use of whatever is grown.

Diversity

Although the focus is on volume production, variations in site conditions, silvicultural systems and requirements for different forest resources will ensure a diversity of stand conditions and hence a wide range of species, ages and size of logs. Factors that contribute to this variability across the forest include variations in site productivity and ecological type. They also include variations in stewardship zone and silvicultural system and other specific management requirements for different forest values; for example, longer rotations in visual landscapes.

Wood Quality

The emphasis on volume per hectare is synonymous with wood quality; the wood characteristics most associated with higher price are narrow and even-ring widths, no or small knots, and a small proportion of juvenile wood. All of these are a function of higher stocking.

We expect the premium for piece size to decrease over time as technical develoments continue to reduce the cost advantage of size. Mechanized systems for processing and harvesting (on flatter ground) are increasingly designed for the size and other characteristics of the available resource. In addition, product developments are trending more towards re-engineered structural wood products and extending the use of quality features (e.g. application of thin veneers).

Type 2 Analysis

Weyerhaeuser is completing a "Type 2" silvicultural analysis for TFL 39, funded by FRBC. This forest level analysis of silvicultural options is intended to provide direction for investment in incremental silviculture in TFL 39. The analysis is scheduled for completion by the end of March 2001. Priority incremental silvicultural treatments (given the objectives described earlier in this section) include vegetation treatments to reduce both above ground and below ground competition, fertilization prescriptions and riparian wide spacing. Fertilization treatments include late rotation fertilization in Douglas-fir stands, treatment of Salal-Cedar-Hemlock sites(as identified by the Salal-Cedar-Hemlock Integrated Research Program (SCHIRP)) and fertilization at time of planting on selected sites (particularly where impacts of spatial constraints such as adjacency or visual landscapes may be realized). Riparian wide spacing is beneficial where treatments occur in reserved areas and assist in recruitment to meet old seral targets and thereby allowing release of alternative reserve areas for harvest. The analysis also supports the management emphasis on regeneration activities such as initial stocking, tree improvement and stand maintenance [e.g. weed control].

Age-class distributions are not a major issue for timber supply in the medium-term. Spacing and pruning should be directed more towards treatments that provide non-timber benefits [e.g. structural diversity and habitat] as well as timber benefits. Often the more significant timber benefits are indirect resulting from a change in harvest scheduling, for example due to meeting landscape biodiversity or habitat requirements.

6.2.3 Silviculture Funding

Funding for silviculture activities is based in legislation. There are two levels of silvicultural activities:

1. Basic Silviculture: activities associated with reaching free-to-grow status.

    a) blocks on crown land logged prior to October 1,1987—costs are the responsibility of the Crown and met through funding mechanisms (principally FRBC).

    b) blocks logged after October 1,1987—costs are the responsibility of the licensee.

2. Incremental Silviculture: activities on stands that have met free-to-grow-status (intensive silviculture).

a) Crown land - costs are the responsibility of the Crown through funding mechanisms (currently FRBC).

b) Private land – costs are the responsibility of the company.

6.2.4 Basic Silviculture

Weyerhaeuser maintains a basic silviculture program on all areas harvested with the goal of reaching free-to-grow status, consistent with the FPC.

Weyerhaeuser's basic silviculture program includes activities that establish and tend new forest crops that suit the ecological and productivity estimates of each site.

Basic silviculture initiates the future diversity and productivity of the forest.

Seed Procurement

Weyerhaeuser maintains an active (3-year) even-flow inventory of seed and hedge materials to reach its reforestation requirements. These materials are ecologically suitable to Weyerhaeuser Crown lands and have some of the highest breeding values in the Provincial tree improvement program.

Where no breeding program exists for a species, collections of natural seeds will fulfill reforestation requirements.

Nurseries and Stock Allocations

Weyerhaeuser uses many different private nurseries to grow container seedling and stecklings for reforestation. The stock is audited for growth performance and health. The specifications of stock quality standards assure Weyerhaeuser of maximum survival and growth of its forest plantations.

Species and Stock Selections

Weyerhaeuser bases species selection on the silvics of the individual species and their adaptability to the particular site, including forest health considerations. The second criterion for selections is species value ranking. This is based on the company view of the wood qualities and desirability at harvest.

Species selection will be consistent with the Establishment to Free Growing Guidebook for the Vancouver Forest Region, recognizing that exceptions to the guidebook are permitted on a site-specific basis when an acceptable rationale is provided. Acceptable species may be coniferous and/or deciduous depending on the site, the company's market strategy requirements and an approved hardwood strategy for the TFL.

Weyerhaeuser has agreements and guidelines for the establishment of defined species in specific situations. These include:

- A strategy for reforesting cedar in Block 6, approved by the Queen Charlotte Islands District Manager. A major difficulty is deer browse of cedar seedlings. The goal of the strategy is to achieve landscape objectives for species [cedar] representation in an efficient [low cost] manner.

- Guidelines for restricting planting of Sitka spruce in medium and high hazard zones [includes Blocks 1 to 5 of TFL 39] for the Sitka spruce weevil [*Pissodes strobi*]. Refer to Appendix VII.

- Guidelines for Abies species (refer to Appendix VII) to reduce the risk of losses from the Balsam Woolly Adelgid.

Stock selections are governed by the objective of maximum survival and performance in balance with cost. Larger stock sizes are generally allocated to brush sites, rehabilitation sites and fill plants. Other factors that are considered for stock type selection are soils, climate, species characteristics and season of plant.

Site Preparation

Anticipated site preparation necessary to renew the forest is prescribed in the Silvicultural Prescriptions and confirmed in the post harvest survey. Site preparation methods that may be prescribed include mechanical piling or dispersal of slash, broadcast or accumulation burns, and mechanical or chemical control of brush or unwanted vegetation.

Each potential method is considered in terms of economics, environmental impact and government regulation—e.g., for smoke control, use of herbicides, or protection of fish habitat—before the optimal solution is prescribed.

Regeneration Methods

Natural regeneration will be emphasized in the Old Growth and Habitat zones where there are greater retention levels and more use of Shelterwood and Selection systems. Supplemental fill planting will be used in these zones to meet stocking or stand composition objectives.

Weyerhaeuser analysis shows that prompt establishment and full stocking give the best return among silvicultural investments.

In the Timber zone, it is expected that planting will occur on the majority of cutblocks, with an emphasis on prompt, high density stocking. Genetically improved planting stock will be used whenever available. Weyerhaeuser will use fertilization at time of planting, on some sites, to give the stock a boost over competing vegetation and help with establishment onto the site.

Variable retention provides additional flexibility for managing sites that are difficult to regenerate. The amount and distribution of retention can be varied to encourage natural regeneration and to provide additional shelter for young seedlings.

Surveys and Monitoring

Surveys will be used to determine total stocking, productive areas and non-productive areas, crop trees per hectare, and free-growing status. The normal assessment regime for each site prior to claiming free-growing status is described below:

1. A post-harvest survey confirms whether or not the treatments in the SP - regarding rehabilitation measures, slash loading and disposal, site preparation, regeneration method and timing - still apply. A SP amendment is made if necessary, and treatments are scheduled.

2. A stocking survey is made at least two years prior to the end of the regeneration delay period where natural regeneration is prescribed. If it appears the target will not be met, alternate actions, which may include one or more of mechanical site preparation, weed control or planting will be undertaken. If necessary, a SP amendment is made.

3. A survival survey generally occurs one year after planting. If necessary, a fill plant or a replant is scheduled.

4. At least one regeneration performance survey is made to confirm stocking status three years after planting or three years after declaring an area stocked naturally. If needed, fill planting or weed control is scheduled.

5. A free-growing assessment is made near the end of the early free-growing period. Necessary weeding or spacing treatments are scheduled. A final free-growing survey is carried out.

External reporting and auditing will be done to the MoF standards listed in the SP.

At each survey a stand formula is completed or revised for inclusion in the forest inventory records.

Regeneration Maintenance

Whenever a new tree crop is in danger of not meeting its free-growing requirements, regeneration maintenance will be carried out. The method of maintenance prescribed will be dependent on brush species, growth habits, suitability and cost of mechanical or manual means, availability and suitability of herbicide, and ecological considerations including the provisions of the Riparian Management Area Guidebook.

Brush control by non herbicide methods will be favoured where results and costs are comparable.

When unacceptable animal damage occurs (such as browse on Cw in the QCI), protection measures will be administered.

6.2.5 Incremental Silviculture

Weyerhaeuser maintains an incremental/intensive silviculture program on specific areas harvested, with the goal of adding timber volume and value, other resource values and social benefits to the forest.

Weyerhaeuser's intensive silviculture program includes activities that tend established forest crops. The activities are selected based on economics, social benefits and suitability to the sites.

Tree Improvement

Weyerhaeuser has a long history of being active in the field of tree improvement. The Tree Improvement strategy focuses on:

- ensuring a secure supply of improved Fdc, Hw, Cw, Cy, Pw, and Ss seed;
- securing reforestation materials with the highest improvements available in volume, value and /or pest resistance;
- deploying the best materials to be utilized on the highest sites where return on investment will be the greatest;
- maintaining and enhancing genetic diversity across the landscape;
- continuing to participate in the Provincial Forest Genetics Council and other affiliated organizations.

Weyerhaeuser views tree improvement as one of the largest gain factors to high-yield forestry.

Spacing

Analysis of Weyerhaeuser's data suggests that conventional spacing strategies reduce merchantable stand volumes and that minimal stand value gains are expected from density control alone. It is recognized that additional value may be achieved by spacing for other objectives in specific stand circumstances. Such situations may include selection of the preferred crop tree species (e.g. Douglas-fir, redcedar or yellow cypress), the establishment of windfirm boundaries and development of habitat.

Maximum density requirements for TFL 39 will be reviewed. Sources of information include results of the Type 2 analysis and earlier analyses. Depending on the results of this review, an application may be made to specify maximum density requirements for TFL 39 that are different from the 10,000 sph rule in the Silvicultural Regulations.

Weyerhaeuser will continue to do spacing operations using available public funding and will cooperate with provincial initiatives to provide opportunities for spacing investments, particularly those directed towards enhancement of timber value (e.g. species selection), non-timber resources and social objectives.

One such opportunity for using public funding to further public objectives is to apply variable density spacing to develop old-growth, riparian and ungulate forage attributes more rapidly than without treatment. Of particular value, are treatments that occur in otherwise reserved areas, and so assist in meeting landscape objectives at no or minimal cost to timber objectives.

Pruning

Pruning increases the volume of clear wood, can reduce the amount of juvenile wood and hence may increase log value. The economic return on pruning is uncertain considering the high costs of the activity, the long investment period and the reliance on a high premium for clearwood.

Weyerhaeuser will participate in funded pruning activities for social benefit, visual quality and habitat enhancement.

Fertilization

Weyerhaeuser recognizes fertilization as a major contributor to high yield forestry. Opportunities for gains occur in fertilization at time of planting and mid-late rotation fertilization. Funding (FRBC) for fertilization treatments on crown land will be sought.

Selected sites will be fertilized at time of planting. Benefits include giving young trees a boost on poor and brush-prone sites and increasing medium term harvest opportunities by shortening the time needed to reach free-to-grow.

Fertilization of Douglas-fir sites have shown a positive response. Yield gains and financial benefits are proven with up to three fertilizer applications spaced 7-10 years apart and before harvest for Douglas-fir sites. Recommendations are to fertilize medium- and good site [Site Index 24 to 35] candidate stands.

Fertilization of Hw and Cw salal sites also show a response (SCHIRP study). Weyerhaeuser will follow the guidelines from this report for these sites.

Hardwood Management Strategy

TFL 39 includes almost 9 000 ha of stands with a deciduous [primarily red alder] leading species.

In aggregate, these deciduous stands contribute to both landscape biodiversity and timber production objectives.

Many deciduous areas will be retained for biodiversity [e.g. habitat and riparian] values. Variable retention provides additional flexibility for leaving deciduous trees [individual and patches] across the forest landscape.

Other deciduous areas will be managed for timber production. Management of areas for red alder, will be contingent on approval of a hardwood management proposal by the regional manager. Development and submission of this strategy

will occur by December 31, 2001. In the interim, establishment of alder on suitable sites may occur on a small scale.

The hardwood management proposal will outline the overall strategy and provide direction on establishment and stand management of red alder stands. This will include guidance on regenerating harvested areas to alder or conifer species depending on site characteristics. Species selection will be consistent with the Establishment to Free Growing Guidebook for the Vancouver Forest Region.

In some areas, considerable volumes of alder have regenerated and grown in disturbed areas such as adjacent to roads and landings. Opportunities for utilizing some of this resource will be examined during MP #8.

6.3 Forest Protection and Forest Health

6.3.1 Fire Prevention and Suppression

Weyerhaeuser's primary objective is to prevent fires through good housekeeping, diligent equipment maintenance and strict control of operations as fire danger rises. Our goal is to contain all fires within 24 hours of detection.

Damage to established stands has averaged less than 39 ha per year (less than 21 ha per year in mature stands) during the last 25 years.

Fire prevention and control are governed by operating plans and procedures:

- Divisional pre-suppression plans are prepared and submitted to the Coast Fire centre and to MoF District offices before April 1st.
- Divisional and Regional plans exist for fires not controlled within 24 hours.
- Ground and aerial patrols are made as required by regulation.
- Each division maintains and uses its own fire suppression equipment.
- Each division is connected to the MoF Fire Weather Information Network. In addition Weyerhaeuser sets up strategically located fire weather stations to monitor weather in the various operating areas. Data from these stations are used to modify or cease operations according to hazard rating risk and fire danger rating.

Fuel management plans are developed according to conditions identified during stand assessments (particularly post-harvest assessments). Resulting plans for prescribed burning are submitted to the Forest District for burning permit approval.

6.3.2 Forest Insect and Disease Control

The objective is to minimize losses due to insects and disease through a vigilant program of detection and appropriate control measures.

6.3.2.1 General Strategy

The insect and disease pest management strategy includes:

Detection

Forestlands will be assessed on an ongoing basis to identify potential pest problems. Any suspect areas will be examined and monitored by helicopter or ground surveys and federal or provincial experts will be consulted on appropriate actions.

Application of Pesticides

In cases where control using a pesticide is recommended, we will:

- Develop an action plan.
- Discuss the planned activities with the public.
- Implement the plan according to specifications of the pesticide permit issued by the Ministry of Environment, Lands and Parks.

Minimize Losses

Losses due to insect or disease epidemics will be minimized by:

- Expedient salvage of trees and stands already dead, dying or threatened by pest infestations, subject to environmental and economic considerations.
- Maintaining tight inventory control to keep the volume of logs susceptible to ambrosia beetle attack as low as practical.
- Trapping insects such as ambrosia beetles, where appropriate.
- Carrying out harvesting and sanitation activities in areas identified as disease centers.

Adaptive Management and Monitoring

Forest Health is part of the adaptive management and monitoring program [refer to Section 3.1.3].

Training

Forest health training programs offered through the provincial and federal governments will be reviewed periodically. Company personnel will be sent to appropriate sessions.

Guidelines

Weyerhaeuser has issued guidelines:

- To reduce the risk of future losses to Abies species from the Balsam Woolly Adelgid (Adelges piceae). Although currently not present in TFL 39, the aldegid has been observed in the vicinity of Blocks 1 and 2. The "Guidelines for Abies Species" will be reviewed during MP #8.

- To restrict planting of Sitka spruce in medium and high hazard zones (includes Blocks 1 to 5 of TFL 39) for the Sitka spruce weevil (Pissodes strobi)

Allowances for the Impacts of Forest Pests in Strategic Analyses

Losses caused by insects or disease will be accounted for in strategic analysis (e.g. the Timber Supply Analysis). Current procedures are discussed in Appendix VII.

6.3.2.2 Recent Insect Infestations

Recent insect infestations include the Douglas-fir bark beetle (*Dendroctonus pseudotsugae* Hopk) in Block 1, the conifer sawfly (*Neodiprion* spp.) in Blocks 2 and 5, and the blackheaded budworm (*Acleris gloverana*) in the Queen Charlotte Islands (including Block 6 of TFL 39). These infestations have been monitored regularly.

In Block 1, salvage operations have recovered mortality caused by the Douglas-fir bark beetle infestation. Populations have decreased to normal levels.

Salvage plans were implemented in patches of severely damaged forest in Block 5 and in some high-risk stands in the Kunnun Drainage of Block 2. By 1999, sawfly populations had collapsed in high-risk areas in both Blocks.

The Canadian Forestry Service is monitoring (year 2000) populations of the blackheaded budworm in the Queen Charlotte Islands. Moderate to high infestations have been reported in Louise Island, Alliford Bay and Skidegate areas.

Refer to Appendix VII for a more complete description of insect pests in TFL 39.

6.3.2.3 Forest Diseases and Variable Retention

Concern has been expressed over variable retention and the management of dwarf mistletoe and root rot, particularly where occurrence of these diseases is widespread.

Refer to the "Company Guidelines for Variable Retention" for more details on prescription options. In general:

- Variable retention will be prescribed to remove groups of trees that are most severely infected with dwarf mistletoe. For example, where risk is high, lighter levels of aggregated retention will be practiced; if low then group shelterwoods, group selection or dispersed retention could be used. Heavily infected trees along the boundaries of retention can be removed or girdled (creating snags). Mistletoe spreads slowly (1 m to 1.5 m per year) so group shelterwoods and group retention should not pose a great risk, and planting non-susceptible species in a 15m-20m buffer along infested edges can be effective. In some areas, felling residual hemlock saplings after harvest will reduce mistletoe in the new crop.

- Laminated root rot (*Phellinus weirii*) occurs in pockets in Douglas-fir stands in Blocks 1 and 2. Strategies for addressing these infections include surveys to map the infected areas, planting of resistant species (e.g., western redcedar) or stumping where appropriate and monitoring the results of earlier initiatives and other research to determine appropriate treatments.

  Root rot can be managed effectively under variable retention by removing vulnerable species or high infection centres. Alternatively, in some situations, leaving some infection centres and planting resistant species around them may add to the diversity in the stand while not posing a major threat to the remainder of the stand.

6.3.3 Wind Damage

Small cutblock sizes and reserves within cutblocks (e.g., wildlife tree patches and riparian management areas) expose more timber edge to potential damage from strong wind events.

Although variable retention may create more exposed edges, the retention pattern could modify wind forces against edges and reduce windthrow relative to clearcuts.

The objective is to minimize losses from windthrow. The strategy involves further development of practices already in place:

- Assessment of windthrow hazard and risk. This has been taken further in a FRBC funded project at Port McNeill Timberlands where current windthrow hazard models have been applied to produce windthrow hazard maps. These maps will facilitate better prescriptions and choice of retention levels. Maps will be developed following model calibration for other portions of TFL 39, beginning with Block 2 in 2001.

- Cutblock and retention patch design based on knowledge of historic wind patterns and assessments.

- Management practices such as feathering of edges (applied according to the assessment results).

- Monitoring. The company will design and implement a windthrow monitoring program. This program will document the amount of windthrow occurring in variable retention areas and provide a baseline against which to measure future windthrow management.

- Recovery of downed trees where practical. The increased use of helicopter grapple yarding should allow retrieval of small patches of windthrow and individual trees that were uneconomic to salvage in the past. Large rotting logs play an important role in forest ecosystems. Hence a variety of size classes of woody debris and damaged or rotten logs will be left behind to maintain natural cycles and habitats.

Refer to "Company Guidelines for Variable Retention" for more details on prescription options for wind damage.

6.3.4 Browse Damage to Seedlings

Deer and/or elk browse of seedlings has a significant impact on reforestation in some areas. Measures to protect seedlings from browse damage are costly. The impact is greatest on redcedar and yellow cypress, as these species are most palatable to deer.

Less palatable species will be planted where appropriate in areas that are highly susceptible to browse. Protective measures will be used where necessary.

In Block 6, a strategy for reforesting cedar has been developed and approved by the District Manager. The goal is to achieve landscape objectives for species (cedar) representation in an efficient (low cost) manner. If additional opportunities are identified then the strategy will be amended, subject to district approval.

An issue of elk damage to seedlings in Block 1 is yet to be resolved. Roosevelt Elk were transplanted to the Nanton Lake area of Block 1 in the mid 1990s. Currently the herd is around 100 animals. The elk have heavily browsed redcedar seedlings, severely impacting a number of plantations.

The MoELP made written commitments at the time of the transplant. However, the herd has neither been controlled in numbers, nor the cost of seedling protection reimbursed. This has led to substantial additional costs of seedling protection for the licensee. Further efforts will be made to resolve this issue.

7.0 PLANNING

7.1 Introduction

Management is according to the Regulations and Guidelines issued under the Forest Practices Code legislation and other applicable legislation.

This includes operational planning requirements [Forest Development Plans, Road Permits, Silvicultural Prescriptions and Cutting Permits]. Weyerhaeuser

will work with MoF and MoELP staff to improve the efficiency and effectiveness of the operational planning process. Refer to Section 7.10 for an initiative occurring in Block 1 of TFL 39 [Stillwater Timberlands].

Most of this section summarizes the many regional and sub-unit planning processes that are occurring and Weyerhaeuser's commitment to these processes.

7.2 Higher Level Plans

As of March 01, 2001 there were two higher level plans in place in TFL 39.

A higher level plan has been established for the Resource Management Zones (and objectives) of the Vancouver Island Land use Plan (VILUP).

Objectives and Old Growth Management Areas (OGMAs) have been defined for the Bunster Landscape Unit, a small portion of which is in Block 1 of TFL 39. These objectives and OGMAs will be incorporated into operational planning and future strategic analyses.

In addition landscape unit planning is proceeding (refer to section 7.11) and is expected to result in many more landscape unit plans been declared as higher level plans during MP #8.

7.3 Vancouver Island Land Use Plan (VILUP)

The Resource Management Zones (and objectives) of the VILUP were declared a Higher Level Plan on December 1st, 2000.

Blocks 2 and 4 of TFL 39 are on Vancouver Island and are part of the VILUP.

Protected areas have been established on almost 4 000 ha of TFL 39. Most of this is in Block 2 and includes the Robson Bight and Claude Elliot Protected Areas in the Tsitika Watershed and the White River Pocket Wilderness Area. A small portion of Block 4 is included in the Lower Nimpkish Protected Area.

Resource management zones include Special Management Zones (SMZs), Enhanced Management Zones(EMZs) and General Management Zones (GMZs)

The Johnstone Strait, Tsitika River and Strathcona-Schoen SMZs occur on portion of Block 2.

SMZs are areas for which conservation of one or more resource values, such as biodiversity, wildlife, recreation or scenery have been defined as a priority. Management is directed towards greater retention of old-growth and mature forest cover, small harvest areas, alternative harvest systems (non-clearcut) and visual quality.

The draft biodiversity emphasis and the Weyerhaeuser draft stewardship zone designations are consistent with this conservation direction.

- Both the Tsitika River and Strathcona–Schoen SMZs are in high biodiversity emphasis landscape units and the Johnstone Strait SMZ is an intermediate biodiversity emphasis. The higher biodiversity emphasis includes higher targets for old-growth forest.

- Similarly the SMZs are in either old-growth (Johnstone Strait and part of the Tsitika SMZ) or habitat stewardship zones (Strathcona-Schoen and part of the Tsitika SMZ). Goals for old-growth stewardship zones include reserving two thirds of the area from harvest activity and applying uneven aged silvicultural systems in the other third. Habitat areas have higher levels for minimum stand-level retention than timber zones (15% compared to 10%).

EMZs occur in the Holberg and Keogh-Cluxewe landscape units of Block 4 and in the Adam & Eve and Salmon units in Block 2. The management emphasis of EMZs is on timber production (larger cutblocks and less constraining green-up requirements for adjacency) while maintaining the FPC's requirements for environmental protection. The TFL 39 areas in EMZs are classified as low biodiversity emphasis (draft) and are in Weyerhaeuser's draft timber stewardship zone.

The remaining areas, primarily in the Marble and Nimpkish (Block 4) and the Sayward and portions of the Tsitika and White watersheds [Block 2] are classified as GMZs.

Weyerhaeuser is committed to:

- The VILUP, including the Resource Management Zones (and objectives) of the Higher Level Plan.

- The Landscape Unit Planning Process. Refer to Section 7.11. More specific management objectives and direction for each management zone will be determined during the next two to three years through the landscape planning process.

7.4 Tsitika Watershed Integrated Resource Plan (TWIRP)

Weyerhaeuser has actively participated in TWIRP over the last twenty years. The plan no longer has status in legislation. The FPC, VILUP and landscape unit planning, now provide the framework for integrated resource planning in the Tsitika Watershed. Many of the results of the plan (TWIRP) including deer winter ranges, recreation areas and sensitive sites are still in effect and will contribute towards plans for the Tsitika SMZ and the Tsitika Landscape Unit.

7.5 Central Coast Land and Coastal Resource Management Plan (CCLCRMP)

Weyerhaeuser is committed to actively participate in the CCLCRMP process.

Roading and harvesting in the Koeye Watershed of Block 7 have been deferred since 1991 due to study area status, first as an old-growth deferral area and latter as a Protected Area Strategy study area.

As of the date of this plan, multi-stakeholder (including Weyerhaeuser) discussions are in progress. It is expected that this communication initiative will contribute to discussions at the CCLCRMP table.

7.6 Queen Charlotte Island Local Resource Management Plan (QCILRMP)

This planning process has not yet been fully initiated. Discussions continue between the Land Use Coordination Office (LUCO), the Ministry of Aboriginal Affairs and the Council of Haida Nations (CHN) on the planning process in the context of treaty related measures.

7.7 Island Community Stability Initiative (Queen Charlotte Islands)

Weyerhaeuser is also working with the Island Community Stability Initiative (ICSI) in the Queen Charlotte Islands. The company acknowledges the commitments made as an addendum to the Memorandum of Understanding between ICSI and the Ministry of Forests (dated August 28, 1996). One strategy that has been discussed is to transfer the TFL, Block 6 allocation of SBFEP to the QCI Community Forest (refer to Section 6.1.2.2).

7.8 Tlell Local Resource Use Plan

Weyerhaeuser has been involved in the Tlell LRUP since its inception in 1996. The working group for this planning process has involved participants from many community, government and industry groups. These include the Ministry of Forests; the Department of Fisheries and Oceans; the Tlell Watershed Society; the Friends of Tlell; the Island Community Stability Initiative; the Graham Island Advisory Planning Commission; the Gowgala Institute; the IWA; local trappers, independents and Weyerhaeuser.

A final report is scheduled for completion by March 31, 2001. It is expected to include Higher Level Plan Objectives that relate to resource management zones within the Tlell. Weyerhaeuser remains committed to this planning process and will include the outcomes in operational and strategic planning.

7.9 Haslam – Lang Integrated Watershed Management Plan

An IWMP has been completed for the Haslam/Lang Watershed, a portion of which is in TFL 39, Block 1. This watershed supplies water to the community of Powell River.

Emphasis is on harvest restrictions to maintain a low level of impact in the watersheds [as directed by the current CWAP].

7.10 Stillwater Timberlands Pilot Project – "Forest Stewardship Plan"

In the summer of 1999, the British Columbia government amended the FPC, adding part 10.1 – "Pilot Projects to Improve the Regulatory Framework for Forest Practices"

In early 2000, Stillwater Timberlands developed a proposal for Block 1 of TFL 39 that was accepted as a pilot project under Section 10.1.

The Stillwater Pilot Project will reinvent the forest management approvals process so as to:

- Encourage local community, government agency and First Nation's involvement early in the planning process, moving from review and comment on proposed plans to participation and consultation during the planning process.
- Provide flexibility to adapt to market fluctuations and changing customer demands.
- Focus on landscape level planning to protect and conserve forest resources and resource features.
- Shift the forest management focus from office approvals to field results, emphasizing an adaptive management approach to facilitate continuous improvement.

The focus of the Pilot Project is on removing process from the existing framework for forest practices. Current environmental standards will be maintained or improved.

The Pilot Project proposes reducing the existing six separate documents requiring government approval; The TFL Agreement, the Management Plan, the Forest Development Plan; the Road permit; the Silviculture Prescription and the Cutting Permit to four documents; the TFL Agreement, the AAC Determination, the Forest Stewardship Plan and the Cutting Permit.

The current management plan process to identify resource values and issues, establish objectives and provide opportunity for public input will be incorporated into the Forest Stewardship Plan. These objectives will be signed off by the District Manager and considered by the Chief Forester in the AAC determination. The timber supply analysis and the twenty-year plan will remain unchanged. The AAC determination will still be conducted every five years and will remain the responsibility of the Chief Forester.

The public review of the Pilot Project Regulation has been completed and the detailed proposal submitted. It is expected that this new regulation will be enacted by early Spring, 2001. The Forest Stewardship Plan will then be advertised for public review and comment, and final approval is anticipated by the end of 2001.

The Pilot Project is resulting in changes to forest zoning in Block 1. To date, changes have included the classification of some areas as old-growth

stewardship zones and other areas as recreation zones, including reserve and management buffers adjacent to defined trails. Landscape unit planning is currently underway and will result in the definition of Old Growth Management Areas (OGMAs). When these planning initiatives are complete, the resulting Block 1 Timber harvesting Land Base (THLB) will be summarized and compared with that for Management Plan #8.

If the Block 1 THLB changes more than 10% from that for MP #8 then the change and implications for future timber supply will be discussed with the Chief Forester. Further analysis and re-examination of the AAC contribution of Block 1 will depend on the outcome of this discussion.

It is noted that:

- Analysis and re-determination of the AAC at 5-year intervals is intended to allow for timely adjustment of harvest levels according to changes in the THLB and other assumptions.

- The MP #8 analysis shows a Long Term Harvest Level (LTHL) of 668,000 m^3/year that is 21% higher than the proposed AAC contribution of 550,000 m^3/year. The sensitivity analysis shows that a 5% reduction in the THLB affects the LTHL but need not impact the current cut level (the AAC). The proposed AAC and LTHL numbers indicate that the THLB would have to be decreased by considerably more than 10% to necessarily impact current harvest levels.

7.11 Landscape Unit Planning:

The MoF and MoELP have developed a Regional Landscape Unit Planning Strategy. This initiative has defined draft landscape unit boundaries and assigned biodiversity emphases to these units.

District staff (MoF and MoELP) have been directed to complete draft plans for priority landscape units in the Vancouver Region by March 31, 2001. Exceptions include landscape units in the CCLCRMP process, for TFL 39 this includes Blocks 3, 5 and 7. A main product of the landscape unit planning process will be definition of Old growth Management Areas (OGMAs).

Weyerhaeuser will continue to work with MoF and MoELP staff to develop plans for landscape units that coincide with company tenures. This includes:

- Providing data on forest cover and existing reserves for lands managed by Weyerhaeuser.

- Assisting in locating and defining Old Growth Management Areas. A spatial inventory of OGMAs will be developed and maintained for use in both operational and strategic planning.

- Integrating variable retention into landscape unit planning. This includes recognizing the contribution over time of variable retention to meeting old seral targets.

The landscape unit planning process has been accelerated in Block 1 to meet the requirements of the Stillwater Timberlands Pilot Project (refer to Section 7.10). Landscape unit plans including definition of draft OGMAs will be developed by June 01, 2001.

The landscape unit planning process is also well advanced in Block 2. It is expected that initial plans will be prepared for Block 2 landscape units by March of 2001. In Block 4, the Marble landscape unit is a priority for the Port McNeill Forest District.

In general, there is a good correspondence between the Weyerhaeuser stewardship zones and draft biodiversity emphasis options. All high biodiversity landscape units include some area in an old-growth stewardship zone and the balance is usually in a habitat zone. The old-growth zone portions will on average have 66% of the forest area reserved from harvest.

Similarly, most of the intermediate biodiversity emphasis landscape units correspond to either habitat or old-growth stewardship zones. Those that are in timber zones are generally where TFL 39 is only a small portion of the Landscape Unit. The exception is the Ian Landscape Unit in Block 6. Designation as a timber zone will not limit fulfillment of the landscape unit planning requirements for intermediate biodiversity emphasis [refer to the discussion in Section 3.1.2].

The low biodiversity emphasis landscape units are predominately in timber stewardship zones. The following table summarizes stewardship zones for high and intermediate biodiversity emphasis landscape units in TFL 39.

Table 7.1 Comparison of Landscape Unit Draft Biodiversity Emphases and Forest Project Stewardship Zones

Block	Draft Landscape Unit	Draft Biodiversity Emphasis Option	Weyerhaeuser Stewardship Zone
Block 1	Brittain	Intermediate	Habitat and old-growth
	Powell Daniels	Intermediate	Habitat and old-growth
	Powell Lake	Intermediate	Some old-growth, rest timber
Block 2	Tsitika	High	Habitat and old-growth
	White	High	Habitat and old-growth
	Sayward	Intermediate	Timber – relatively small area (approximately 6 500 ha)
Block 3	Bonanza	Intermediate	Timber – small area (approximately 2 500 ha)
Block 4	Marble	Intermediate	Timber and habitat
Block 5	Phillips	High	Habitat and old-growth
Block 6	Hibben	High	Old-growth
	Yakoun Lake	High	Largely old-growth
	Honna	Intermediate	Timber (approximately 2 000 ha)
	Ian	Intermediate	Timber
	Lower Yakoun	Intermediate	Timber with a 1 km old-growth zone on either side of the river.
	Sewell	Intermediate	Old-growth
	Tlell	Intermediate	Habitat
Block 7	Nootum/Koeye	Intermediate	Approximately one third in each of timber, habitat & old-growth zones

The estimated percentages of productive forest that is old seral [1999], by landscape unit and variant, are summarized at the end of Appendix II.

7.12 Internal and Third Party Audits

Internal systems and compliance audits are conducted by trained staff and consultants to evaluate the effectiveness of environmental management systems and to verify compliance with applicable legislation as well as Weyerhaeuser criteria and operating procedures. Compliance audits are conducted biennially and encompass all harvesting related activities, planning, silviculture and fire preparedness. System audits are done on an annual basis and relate to the requirements of specific certification standards.

Audit results are communicated to the management of the relevant timberlands unit who prepares action plans to address any deficiencies. A report is prepared that contains all audit findings and the related action plans and is submitted to senior management.

Weyerhaeuser BCCG is committed to have all its TFL 39 timberlands certified under the ISO 14001 standard for Environmental Management Systems and the CSA Z809 standard for a Sustainable Forest Management System by 2003 [refer to Section 3.2]. Both require regular third party verification of adherence to the requirements of the standards to obtain and maintain certification.

8.0 RESOURCE INVENTORIES AND RESEARCH

8.1 Introduction

Resource inventories are used in various phases of harvest planning, particularly in the strategic analyses (Timber Supply Analysis and Twenty-Year Plan) of the Management Plan. They are also an important component of Forest Development Plans. These resource inventories are reviewed and updated on a regular basis. This section describes plans for improving inventories during MP #8. Current inventories (used in the MP #8 analyses) are described in Appendix V.

Inventory review and updates are reported in the TFL 39 Annual Report.

Weyerhaeuser BC Coastal Group has initiated changes in data management and planning procedures that will update many of the inventories in a more timely and efficient manner.

- Beginning in 1999, the management of Geographic Information Systems (GIS) has been moved from a central location to each Timberlands Operation. Emphasis is shifting from the 1:20,000 scale traditionally used in strategic planning to collecting and building spatial data sets over a range of spatial resolutions, varying according to theme. For example roads and harvest blocks might be entered at a 1:5,000 scale while recreation features might be mapped at a scale of 1:20,000. In addition, Timberlands Operations are adopting spatial planning software such as Canfor's GENUS system. When these initiatives come together during the next five years, many of the resource inventories will be more directly updated, by processing spatial and attribute data sets entered during operational planning and recording of assessments.

- For example the forest inventory may be directly updated as roads are built, areas harvested and silvicultural treatments and assessments completed. Similarly stream classifications, riparian areas, changes to wildlife areas, wildlife tree patches etc. will be recorded and available for updating the various inventories as they occur. The growing proportion of inventory data collected operationally will provide an increasingly useful sample for testing forest wide net-downs for strategic analyses. In this way, estimates can be

improved of net-downs for example on Class IV soils and allowances for wildlife tree patches, culturally modified trees and variable retention.

8.2 Forest (Timber) Inventory

Recent accomplishments include audits and a recompilation of the mature (greater than 130 years) inventory. Also during MP #7 a substantial area of older second-growth (31 years plus) was cruised. Refer to the description in Appendix V, Section 1.

The forest inventory will continue to be updated on a regular basis to reflect changes due to harvesting, silvicultural activities, property additions or deletions and changes in property tenures.

The plan is to have systems and resources in place by the end of 2001 to maintain live forest inventories for each timberlands operation. Updates for roads, harvesting and silvicultural treatments and assessments will be available from entries in operational planning procedures.

By the end of 2001, inventory update procedures will be developed and implemented for variable retention systems. Information on reserves, residual timber available for future harvests and prescriptions are required for planning and monitoring.

Forest Growth and Yield Plan

Plans for MP #8 include:

- The establishment of several large scale (100 ha) and small scale (<20ha) experiments examining the effects of different amounts and patterns of variable retention on growth of the next crop. In addition, planted transects established during 1999 to 2001 with various species will be measured and used to examine the impacts of edge effects on growth of the next crop.

- Subject to funding, a small pilot project will be undertaken to monitor [through random samples] the effects of variable retention on growth.

- A core of treated and natural permanent sample plots will be measured on a 10-year cycle.

- Existing models [Y-XENO] will be supported in the near term with adjustments for the effects of variable retention. In the longer-term, alternative modeling endeavours will be undertaken.

8.3 Operability Mapping

An update of operability mapping (both physical and economic) was completed in 1999. Refer to Appendix V, Section 2 for a description of the terms of reference and a summary of the results.

The status of the operability mapping relative to operational experience will be reviewed by December 31, 2003. The results of this review will determine the need and location of any updating, to be completed by September 30, 2004, in time for the MP #9 analysis.

8.4 Terrain

All of TFL 39 has either Es mapping or 5-class mapping. This information is sufficient for identifying sensitive areas for operational planning. Mapping classification and year of mapping by Block are summarized in Appendix V, Section 3.

A proposal to obtain FRBC funding for assessing and developing a strategy for upgrading terrain mapping in TFL 39 is being prepared. If successful the overview assessment will be implemented in 2001. Resulting mapping upgrades will be completed systematically according to the priorities identified by the assessment. It is expected that the entire upgrade will be completed by 2003.

The 5-class mapping in Block 7 has been upgraded to present standards and will be available in digital form in 2001.

8.5 Recreation

Updates to Recreation Opportunity Spectrum (ROS) and recreation inventories were completed during MP #7. Recreation analyses (by Block) have also been completed and reviewed by MoF staff. Refer to Appendix V, Section 4 for a summary of the dates and standards for these inventories and analyses.

The Block 1 recreation inventory is currently (2000) being reviewed and updated. It is expected that the results will be available by the middle of 2001.

Major revisions to the other inventories are not expected during MP #8. They will be reviewed with MoF District staff by December 31, 2003, prior to MP #9.

8.6 Visual Landscape

Visual landscape inventories have been updated for MP #8. Refer to Appendix V, Section 4 for a summary of the dates and standards for these inventories.

Major revisions to these inventories are not expected during MP #8. They will be reviewed with MoF District staff by December 31, 2003, prior to MP #9.

Known scenic areas will be confirmed with the Forest Districts during 2001. This information will be included in the visual landscape inventory and data set.

8.7 Wildlife

Ungulate winter ranges in Blocks 2 and 4 were grandparented in 1998. These habitat areas will be reviewed with MoELP and MoF District staff prior to October, 2003.

Goat winter range and grizzly habitat inventories for Blocks 1 and 5 were updated in 1999 by MoELP and Weyerhaeuser staff. Further review of the goat winter range polygons is planned for 2000/2001.

Inventories of Identified Wildlife management areas will be developed and updated as areas are identified. These include Goshawk nest sites and Marbled Murrelet nesting areas.

8.8 Riparian

Each operation maintains an inventory of stream classifications and occurrence of fish at a scale of 1:20 000. When the data base and operational planning tool developments (discussed in the introduction on inventories) are in place fish, stream, wetlands and small lake inventory updates will occur more directly by processing operational assessments reported at a scale of 1:5.000.

Over time this more direct link to operational planning assessments will provide an increasingly better (larger and more representative) sample of actual riparian net-downs compared to assumptions based on zone widths and retention levels described in the Riparian Guidebook. This will include recognition of streams that are mapped at a scale of 1:5,000 but are too small to be reported in current 1:20,000 strategic inventories.

The FPC allows for strategic fish inventory methodology under a Local Area Agreement (LAA). During MP #8, opportunities will be examined for using LAAs to more efficiently achieve fish inventory requirements.

8.9 Terrestrial Ecosystem Mapping (TEM)

The objective is to map ecosystems (site series) at 1:20,000 for all Weyerhaeuser BC Coastal Group tenures. This inventory will provide data for strategic and operational planning, including forest level analysis, landscape-level planning and silviculture prescriptions. Funding is provided by Forest Renewal BC. All projects are being done on the TRIM (NAD 83) base and follow the provincial Resource Inventory Committee (RIC) mapping and database standards.

Refer to Appendix V, Section 8 for a description of progress to the end of the 1999/2000 financial year. TEM mapping for all of TFL 39 is expected to be complete in 2002.

8.10 Cultural Heritage Resources

Queen Charlotte Timberlands has FRBC funding for further consolidation of Archaeological Overview Assessments (AOAs) and for further Archaeological Inventory Studies (AIS).

This work will contribute to the Queen Charlotte Islands Forest District (MoF) initiatives for combining such inventories in a digital format, for planning purposes. The intent is to assist operational planning and to develop sound net-down allowances for cultural heritage sites in strategic analyses.

8.11 Old Growth Management Areas (OGMAs)

Spatial inventories of OGMAs will be developed as Landscape Unit Planning proceeds. These inventories will be maintained and used in both operational and strategic planning.

8.12 Forest Research

Objectives are to:

- Actively support forest research, inventory and technological advancement and where appropriate adopt innovative practices and technologies.
- Have a research program aligned with forest stewardship principles

The strategy is to:

- Identify and recommend basic and applied research needs to the organizations that have the specific mandate to undertake the work.
- Prepare and submit research proposals for outside funding for projects of particular or strategic concern to the Licence area.
- Cooperate with these organizations in conducting basic and applied research.
- Test and develop practical applications and uses of published basic research that are relevant to Weyerhaeuser BCCG management goals and responsibilities.

Weyerhaeuser BCCG is an active partner in a number of major research projects. These include:

- The **Montane Alternative Silviculture Systems (MASS)** research project near Campbell River was begun in 1992 as a partnership between Weyerhaeuser BCCG, Canadian Forest Service, BC Ministry of Forests, University of BC, University of Victoria, Forest Engineering Research Institute of Canada and Industry Canada. MASS was formed to test non-clearcut harvest approaches on high-elevation sites. This long-term experiment includes 21 studies investigating many ecological and silvicultural aspects. This project is funded by FRBC.
- Weyerhaeuser together with the MoF and MoELP has been involved in an **Enhanced Forest Management Pilot Project (EFMPP)** in Block 2 of TFL 39 since September of 1995. The project has been funded by FRBC and has focused on developing a working group process and an analytical tool kit for identifying silvicultural investment opportunities spatially. Emphasis during 1999 and 2000 has been on developing and applying spatial planning tools to variable retention systems and developing and implementing an adaptive

management program to support operational implementation of variable retention.

- **The Salal-Cedar-Hemlock Integrated Research Program (SCHIRP).** Weyerhaeuser BCCG has participated in the multi-agency SCHIRP program since 1986. The objective is to determine the processes causing poorly performing plantations in salal-dominated cedar-hemlock sites, and to develop appropriate silvicultural prescriptions. Results have been communicated by a synthesis report, a field guide and field tours.

- **The Adaptive Management and Monitoring Working Group** includes members from Weyerhaeuser, MoF, MoELP, The Centre for Conservation Biology at the University of British Columbia and private contractors. The objective is to monitor growth and yield, regeneration, forest organisms, habitat attributes, forest health, windthrow and costs for a range of variable retention treatment options. For more detail refer to section 3.1.3.

- Weyerhaeuser BCCG has been actively involved in conservation efforts for the endangered Vancouver Island Marmot. In addition the company continues to participate in FRBC funded projects for inventory and research of Northern Goshawks and Marbled Murrelets.

9.0 SUMMARY OF CHANGES AND IMPACTS

This section summarizes some of the key similarities and differences between MP #7 and MP #8, and so describes impacts that are anticipated with implementing MP #8. It is recognized that external events such as changes in law and markets may affect these projections.

9.1 Harvest Levels:

	TFL 39 Harvest volume (000 m^3/year)		
	MP #7	MP #8	Difference
AAC / Recommended AAC	3 740	3 680	-60
Long term harvest level	3 236	3 327	+91

The recommended harvest levels for MP #8 continue the strategy of gradual transition towards the estimated long-term harvest level.

For the total TFL, the base option long–term harvest level is similar to that in the MP #7 analysis. In effect the significant changes that occurred during MP#7 (and incorporated in the MP #8 analysis) have largely offset one another, at least in terms of impacts on timber supply volumes. The major changes between the MP #7 and MP #8 analyses are:

- Positive for timber supply:

    - Revised higher estimates of site productivity (site index). The impact is significant in the long-term. Weyerhaeuser's biophysical site index model

estimates have been used in the MP #8 analysis, while inventory estimates for site index were used in MP #7

TFL 39	Site Index (height in m at breast height age 50 years)
Average for MP #7	23.7
Average for MP #8	26.9
Difference	+3.2

- Reduced impacts from constraints for visual landscape management. This includes new visual landscape inventories and a relaxation in constraints based on cutblock design (assisted by variable retention). The impact is most noticeable in Block 6 (QCI).

TFL 39	Percentage of Timber Harvesting Landbase	
Recommended Visual Quality Class	MP #7	MP #8
Retention	0.8%	0.4%
Partial Retention	21.0%	14.1%
Modification	12.6%	10.5%

TFL 39	Maximum % alteration	
Recommended Visual Quality Class	MP #7	MP #8
Retention	3%	5%
Partial Retention	10%	15%
Modification	20.5%	25%

In MP #8 100% of the non-productive forest area in visual landscape is included in the base for estimating percentage alteration while in MP #7 only 50% of the non-productive forest area was included.

- Younger minimum harvest ages for good and high site second-growth stands. Provides more harvest flexibility in the medium-term.

TFL 39	Range of Minimum Harvest Ages For Typical Stands (years)	
Species Type and SI Class	MP #7	MP #8
D. fir poor sites	102 – 300	150 – 201
D. fir medium sites	77 – 119	89 –136
D. fir good sites	72 – 103	54 –75
D. fir high sites	51 – 90	43 – 56
W. hemlock poor sites	78 – 300	75 – 173
W. hemlock medium sites	61 – 96	60 – 94
W. hemlock good sites	53 – 84	41 – 69
W. hemlock high sites	35 – 74	40 – 56

- Increased volumes in MCIII mature timber types based on results of inventory audits. The result was a 3.9% increase in mature volumes across TFL 39.

- Negative for timber supply:

  The Timber Harvesting Land Base has been reduced by 17% because of:

  Full implementation of the FPC during MP #7 (additional net-downs for riparian in particular, but also for wildlife tree patches, sensitive terrain, wildlife and recreation); and

  The Forest Project (allowances for additional reserves from variable retention and in old-growth stewardship zones).

	MP #7	MP #8	Difference
Total Area (ha)	803,727	801,337	-2,390
Productive Forest Area (ha)	549,122	548,241	-881
Timber harvesting Landbase (ha)	444,399	369,970	-74,429 (-16.8%)

  Reduced yields for future crops because of increased competition from higher levels of stand retention.

Stewardship Zone (MP #8)	% decrease in future yields because of increased competition
Timber	3%
Habitat	11%
Old-Growth	30%

  At the Block level there are some changes in harvest levels between MP #7 and MP #8 (recommended). In particular:

  - The recommended initial harvest level for Block 1 has been increased to better reflect the large inventory of maturing second-growth stands.

  - Recommended harvest levels in Block 7 have been reduced compared to MP #7 projections. This corresponds to significantly increased net-downs in Block 7 because of the draft classification of stewardship zones. The Koeye Watershed is classified as an Old-Growth Zone and hence is netted-down by two thirds for additional old-growth reserves. A further 27% of Block 7 is classified as Habitat Zone with higher levels of retention than in the Timber Zone.

	AAC Contributions by Block (000 m^3)	
Block	MP #7	Recommended for MP #8
Block 1	445	550
Block 2	1,335	1,335
Block 3&4	415	400

Block 5	100	95
Block 6	1,210	1,150
Block 7	195	150
Deciduous area	40	NA
Total TFL 39	3,740	3,680

9.2 Public Review

A significant initiative in public review and input that will continue to develop in MP #8 is public involvement and stakeholder input associated with the CSA Forest Certification process.

Community advisory groups are active at North Island Timberlands (Campbell River – Sayward area), Stillwater Timberlands (Powell River) and Port McNeill Timberlands. A similar process will be formed at Queen Charlotte Timberlands during the next two years. The community advisory groups, with a broad representation from the local community, are proving effective for communicating community input and concerns and for developing joint understanding of forestry planning and issues.

9.3 Economic Opportunities

The groundwork for business relationships between Weyerhaeuser and First Nations has been developed in recent years. Further growth and development of these relationships and business opportunities are expected during MP #8

The Forest Project is not expected to result in significant changes in employment during the next five years. The distribution of work is changing somewhat. The proportion of harvesting by helicopter has increased and is expected to level off at around 20%. Employment in operational planning has increased to service the additional requirements of the FPC, variable retention and forest certification.

9.4 Protection and Conservation of Non-timber Values

Several major initiatives that commenced during MP #7 and are continuing in MP #8 will have a significant impact on non-timber values. They include:

- Landscape unit planning. It is expected that landscape unit plans will be completed during MP #8. Landscape unit objectives and Old-Growth Management Areas will be clearly defined. Increased clarity as to timber available for harvest will also assist operational planning.

- The Forest Project is on schedule for achieving 100% variable retention (0% clearcutting) by the end of 2003. Forest Stewardship Zones will be clearly defined.

- Weyerhaeuser is committed to achieving ISO 14001 Environmental Management Systems (EMS) and CSA Z809 Sustainable Forest

Management System (SFM) forest certification for all TFL 39 timberlands operations by the end of 2002.

9.5 Planning

Much of the FPC has been implemented during MP #7. This has included recent changes to streamline operational planning.

The Management Plan #8 process has benefited from computer technology. A computerized planning tool has been used to prepare the Twenty-Year Plan, resulting in substantial savings in cost and operational planning resources. The main presentation of maps has been presented in a digital form, resulting in a more useful product (user can choose scale, combinations of themes etc.) at a much reduced cost. Similarly, the Management Plan text, and particularly the appendixes have mainly been distributed digitally.

Management Plan #9 will be prepared according to the recently revised schedule. The new process is more streamlined and occurs over a 20 month time-frame rather than 30 months plus for MP #7.

The Stillwater Pilot Project (Section 7.10) to improve the regulatory framework for forest practices will be implemented by the start of MP #8. The project is focused on removing process from the existing framework for forest practices, while maintaining or improving current environmental standards. One aspect involves combining the requirements of the Management Plan, Forest Development Plan, Silviculture Prescriptions and Road Permits into one planning document called the Forest Stewardship Plan.

10.0 MANAGEMENT PLAN ADMINISTRATION

10.1 Managed Forest No. 21

Managed Forest #21, which comprises land privately owned by Weyerhaeuser in the TFL, is managed as an integral part of the licence and to the same standards.

10.2 Revision to MP #8

The MP will be revised or updated to conform to any legal changes, or a notice received from the Chief Forester. In the event of changes to company objectives or management plans necessitated by the business climate or other factors identified by the company, Weyerhaeuser will consult with the Chief Forester about revising the MP.

10.3 TFL Annual Report

An annual report will be submitted each year as requested by the Manager of the Vancouver Forest Region. It will meet the requirements of the Regional Manager and record progress in routine management as well as progress

towards meeting the commitments made or implied in the MP. One or more copies will be made available for public review.

Specific commitments which will be reported upon include:

- Progress in replacing clearcutting with variable retention by the end of 2003.
- Progress in attaining ISO 14001 and CSA Z809 forest certification for TFL 39 Timberlands operations by the end of 2002.
- The development of guidelines for hardwood (alder) management (target date is December 31, 2001).
- Harvest volumes by Block and the current operability classification.
- Progress in landscape unit planning and other regional and sub-unit planning processes.
- Progress in reviewing and updating inventories.

Glossary

Acronyms used in this document

AAC	Allowable Annual Cut
CCLCRMP	Central Coast Land and Coastal Resource Management Plan
CMT	Culturally Modified tree
CSA	Canadian Standards Association
CWAP	Coastal Watershed Assessment Procedure
CWS	Community Watershed
EFMPP	Enhanced Forest Management Pilot Project
EMZ	Enhanced Management Zone
FDP	Forest Development Plan
FPC	Forest Practices Code
FRBC	Forest Renewal British Columbia
FSC	Forest Stewardship Council
GIS	Geographic Information System
GMZ	General Management Zone
ICSI	Islands Community Stability Initiative (Queen Charlotte Islands)
ISO	International Organization for Standardization
IWMP	Integrated Watershed Management Plan
MoELP	BC Ministry of Environment, Lands and Parks
MF	Managed Forest
MoF	BC Ministry of Forests
MP	Management Plan
NAD	North American Datum (27 and 83 refer to years of map projection in 1927 and 1983)
NSR	Not Satisfactorily Restocked
OGMA	Old Growth Management Area
PSP	Permanent Sample Plot
QCILRMP	Queen Charlotte Islands Land Resource Management Plan
RIC	Resource Inventory Committee
ROS	Recreation Opportunity Spectrum
SBFEP	Small Business Forest Enterprise Program
SCHIRP	Salal Cedar Hemlock Integrated Research Program

SFM	Sustainable Forest Management
SI	Site Index
SMZ	Special Management Zone
SP	Silviculture Prescription
TEM	Terrestrial Ecosystem Mapping
TFL	Tree Farm License
THLB	Timber Harvesting Land Base
TSA	Timber Supply Analysis
TYP	Twenty-Year Plan
VILUP	Vancouver Island Land Use Plan
VR	Variable Retention
WTP	Wildlife Tree Patch

Adjacency: The desired spatial relationship among cutblocks. Most adjacency restrictions require that recently harvested areas must achieve a desired condition (green-up) before nearby or adjacent areas can be harvested.
Allowable Annual Cut (AAC): The allowable rate of timber harvest from a specified area of land. The Chief Forester of British Columbia sets the AAC for timber supply areas (TSAs) and tree farm licenses (TFLs) in accordance with Section 8 of the Forest Act.
Basic silviculture: Silviculture treatments used to establish a free-growing crop of commercial trees on a logged area.
Biodiversity Emphasis Option (BEO): The provincial government assigns low, intermediate or high BEOs to landscape units depending on a range of management priorities (i.e. timber production, wildlife habitat and biodiversity conservation). The main result is a designation of the area of old growth forest that should be maintained in the landscape unit.
Biogeoclimatic Ecosystem Classification (BEC): Developed in BC in 1965, the BEC System classifies areas of similar regional climate, expected climax plant communities and site factors such as soil moisture and soil nutrients. The subzone is the basic unit of this classification system. Within subzones, variants further identify more local climatic factors.
Biogeoclimatic zone: a geographic area having similar patterns of energy flow, vegetation and soils as a result of a broadly homogenous macroclimate.
Biogeoclimatic variant: See Biogeoclimatic Ecosystem Classification
Biological diversity (Biodiversity): The diversity of plants, animals, and other living organisms in all their forms and levels of organization, including genes, species, ecosystems, and the evolutionary and functional processes that link them.
Blue-listed: Refers to plants, animals, and plant communities assessed by the BC Conservation Data Centre to be vulnerable.
Brushing: A silviculture activity done by chemical, manual, grazing or mechanical means to control competing forest vegetation and reduce competition for space, light, moisture and nutrients with crop trees or seedlings.

Clearcutting: A harvesting method whereby all trees that meet utilization standards are harvested. The harvested site is then regenerated to acceptable standards by appropriate means including planting and natural seeding.
Coarse woody debris: Logs and stumps that provide habitat for plants, animals and insects, and a source of nutrients for soil development.
Coastal Watershed Assessment Procedure (CWAP): Assesses the impacts of forest practices on the hydrologic regime of a watershed. In particular, the potential for changes to peak stream flows, accelerated landslide activity, accelerated surface erosion, channel bank erosion and changes to channel morphology as a result of logging the riparian vegetation, and changes to the stream channel interaction from all these processes are assessed.
Commercial thinning: A silviculture treatment that 'thins' out a stand by removing trees that are large enough to be sold as products such as poles or fence posts (see also, Juvenile spacing).
Conifer: Cone bearing trees having needles or scale like leaves, usually evergreen, and producing wood known commercially as “softwoods’.
Conventional harvesting areas: Includes timber productive, physically operable land that is loggable by conventional ground based methods; i.e. grapple, high-lead, hoe-chuck, skidder etc.
Cutblock: Defined in the Forest Practices Code of British Columbia Act as a specific area of land identified on a forest development plan, or in a license to cut, road permit, or Christmas tree permit, within which timber is to be or has been harvested. (Also see opening.)
Cultural heritage resource (CHR): An object, a site or the location of a traditional societal practice that is of historical, cultural or archaeological significance to the province, a community or an aboriginal people. Cultural heritage resources include archaeological sites, structural features, heritage landscape features and traditional use sites.
Deactivation: Measures taken to stabilise roads and logging trails during periods of inactivity, including the control of drainage, the removal of side-cast where necessary, and the re-establishment of vegetation for permanent deactivation.
Deciduous: Perennial plants which are normally leafless for some time during the year.
Ecosystem: A functional unit consisting of all the living organisms (plants, animals and microbes) in a given area, and all the non-living physical and chemical factors of their environment, linked together through nutrient cycling and energy flow. An ecosystem can be of any size – a log, pond, field, forest, or the earth's biosphere – but it always functions as a whole unit.
Environmentally sensitive area (ESA): Area requiring special management attention to protect important scenic values, fish and wildlife resources, historical and cultural values, or other natural systems or processes. ESAs include unstable soils that may deteriorate unacceptably after harvesting, and areas of high value to non-timber resources such as fisheries, wildlife, water and recreation.
Environmental Management System (EMS): A structured system for identifying and ranking the environmental risk associated with management activities; creating and implementing control methods to manage that risk; monitoring and assessing performance; and taking corrective action to address deficiencies under a continual improvement program.
Forest Development Plan (FDP): These plans explain resource values present in a specified area, how the values will be protected or maintained, where roads will be built and what areas are proposed for harvest. They are revised annually, advertised and

presented for public review and comment before presentation to the Ministry of Forests for approval.

Forest influence area: The area within an opening that is within one tree height of a timber edge.

Forest Practices Code (FPC): The Forest Practices Code of British Columbia Act, the regulations made by Cabinet under the act, and the standards established by the BC Chief Forester. The term is sometimes used to include guidebooks associated with the Code.

Free to grow: A stand of healthy trees of commercially valuable species, the growth of which is not impeded by competition from plants, shrubs or other trees. Silviculture regulations further define the exact parameters (e.g., species, density and size) that a stand of trees must meet to be considered free growing.

Geographic Information System (GIS): A computerized system designed to allow users to collect, manage and analyse large volumes of spatially referenced (map) information and associated attribute data.

Green-up: A reforested cutblock with a stand of trees that has attained the height specified in a higher level plan for the area or that, in the absence of a higher level plan, has attained a height of at least three meters is said to have achieved green-up.

Guidebook: Guidebooks consist of guidelines and recommendations on how to best achieve the requirements of the Forest Practices Code. They are not legally enforceable. However, specifications and procedures recommended by the guidebooks may be incorporated into plans, prescriptions and contracts in which case those specifications and procedures may become legally enforceable.

Incremental silviculture: silviculture treatments applied after a stand has reached free-growing.

Information Package: A TFL licensee submits a timber supply analysis information package which details the technical information and assumptions to be included in the timber supply analysis. Includes inventories, net-downs (area and volume), expected timber growth rates and other resource management assumptions. The package is reviewed by the MoF.

Inoperable lands: Physically inoperable refers to 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. Economically inoperable refers to timber of low value and/or high cost such that logging would occur at a financial loss.

ISO standard: Refers to ISO 14001, a generic international standard approved by the International Organization for Standardization to provide any organization with the elements of an effective Environmental Management System to support environmental protection and prevention of pollution.

Integrated resource management: The identification and consideration of all resource values, including social, economic and environmental needs, in resource planning and decision-making.

Karst: Karst features include fluted rock surfaces, vertical shafts, sinkholes, sinking streams, springs, complex sub-surface drainage systems and caves. Karst is a distinctive topography that develops as a result of the dissolving action of water on carbonate bedrock (usually limestone, dolomite or marble).

Landing: An area modified as a place to accumulate logs before they are transported.

Landscape level: A watershed, or series of interacting watersheds or other natural ecological units. This term is used for conservation planning and is not associated with visual landscape management.

Landscape unit: For the purpose of the forest practices code, landscape units are planning areas delineated on the basis of topographic or geographic features. Typically they cover a watershed or series of watersheds, and range in size from 5000 to 100 000 ha.
Long Term Harvest Level (LTHL): A harvest level that may be maintained in the long term given a defined timber harvesting land base, estimates of forest growth and description of management for timber and non-timber resources.
Mature forest: Generally, stands of timber where the age of the leading species is greater than the specified cutting age. Cutting ages are established to meet forest management objectives. In TFL 39, mature is defined as forest areas established before 1864.
Non-conventional harvesting areas: Includes timber on productive, physically operable land that is loggable only by "non-conventional" aerial methods. These include helicopter and long-line cable systems.
Not Satisfactorily Restocked (NSR): Productive forest land that has been denuded and has not regenerated either naturally or by planting or seeding to the specified or desired free growing standards for the site.
Old growth: Old growth is a forest that contains live and dead trees of various sizes, species, composition and age class structure. Old-growth forests, as part of a slowly changing but dynamic ecosystem, include climax forests but not sub-climax or mid-seral forests. The age and structure of old growth varies significantly by forest type and from one biogeoclimatic zone to another. As a rough measure, forests on the BC Coast that are aged 250 years or older and exhibit few or no signs of human intervention are generally termed old growth. (See also second growth and mature.)
Opening: Usually used synonymously with cutblock (see above) to include all of an area that has been harvested or is designated for harvesting, including the trees retained singly or in groups within the area. Less often, used to describe the actual cleared area(s) within a cutblock.
Partial harvesting (cutting): A general term referring to silviculture systems other than clearcutting, in which only selected trees are harvested. Includes seed tree, shelterwood, selection and retention systems.
Permanent access structure: A built structure, including a road, bridge, landing, gravel pit, etc. It is shown expressly or by necessary implication on a forest development plan, access management plan, road permit or silviculture prescription as remaining operational after timber harvesting activities on the area are complete.
Productive forest: Forest land that is capable of producing a merchantable stand of timber within a defined period of time.
Pruning: The manual removal of the lower branches of crop trees to a predetermined height to produce clear, knot-free wood.
Red-listed: Refers to plants, animals and plant communities assessed by the BC Conservation Data Centre to be extirpated, endangered or threatened.

Reforestation (regeneration): Establishment of a new stand of trees after harvesting or natural disturbance by either planting or natural regeneration. Before receiving approval to harvest on crown lands, a forester must submit a Silviculture Prescription describing, among other things, the manner and time frame within which reforestation will be conducted.
Reserve zones: Zones where harvesting is not permitted.
Retention system: Defined in the BC Operational Planning Regulation as a silvicultural system designed to retain individual trees or groups of trees to maintain structural

diversity over the area of the cutblock for at least one rotation and leave more than half the total area of the cutblock within one tree height from the base of a tree or group of trees, whether or not the tree or group of trees is inside the cutblock.
Riparian: An area of land adjacent to a stream, river, lake or wetland that contains vegetation that, due to the presence of water, is distinctly different from the vegetation of adjacent upland areas.
Rotation: The planned number of years between establishment of a tree crop and its final harvest. Can be based on physical, biological, pathological or economic criteria.
S1-6 stream: Stream classification system for riparian management. S1 to S4 streams are fish streams or streams in a community watershed. S5 and S6 streams are not fish streams and are not in a community watershed. Each class also denotes a range of stream width: S1 is >20m, S2 is >5-20m, S3 is = 1.5-5m, and S4 is <1.5m; for streams that are non-fish bearing or not within a community watershed, S5 is >3m and S6 is <3m.
Second growth: Typically younger (i.e., less than 120 years on the BC Coast) forests that have been established by planting and/or natural regeneration after removal of a previous stand by fire, harvesting, insect attack or other cause. (See mature and old growth.)
Selection: A silviculture system that removes mature timber either as single scattered trees or in small groups at relatively short intervals, repeated indefinately, where the continual establishment of regeneration is encouraged and an uneven-aged stand is maintained.
Sensitive soils: Forest land areas that have a moderate to very high hazard for soil compaction, erosion, displacement, landslides or forest floor displacement.
Shelterwood: A silviculture system in which trees are removed in a series of cuts designed to achieve a new even-aged stand under the shelter of the remaining trees.
Silviculture: The art and science of controlling the establishment, growth, composition, health and quality of forests and woodlands. Silviculture entails the manipulation of forest and woodland vegetation in stands and on landscapes to meet the diverse needs and values of landowners and society on a sustainable basis.
Silviculture Prescription (SP): A site-specific integrated operational plan to carry out one or a series of silviculture treatments.
Silvicultural system: A planned program of treatments throughout the life of the stand to achieve defined objectives. A silvicultural system includes harvesting, regeneration and stand-tending. It covers all activities for the entire length of a rotation or cutting cycle. In BC this includes seven major categories: clearcut, patch-cut, coppice, seed tree, shelterwood, retention and selection.
Site Index (SI): A measure of site productivity. Site indices in British Columbia are based on heights of free-growing dominant trees of a given species at a reference age of 50 years above breast height. Site index curves have been developed for British Columbia's major commercial tree species.
Small Business Forest Enterprise Program (SBFEP): This program permits the MoF to sell Crown timber competitively to individuals and corporations who are registered as SBFEP
Snag: A large standing dead tree.
Spacing: A silvicultural treatment to reduce the number of trees in young stands, often carried out before the stems removed are large enough to be used or sold as a forest product. (see Commercial thinning).
Species at-risk: Species identified by the BC Conservation Data Centre as red- or blue-listed.

Stand level: Level of forest management at which a relatively homogenous (usually small) land unit can be managed under a single prescription, or a set of treatments, to meet well-defined objectives.
Stewardship Zones: Under the BC Coastal Group's Forest Project, all public and private forest lands have been (or will be) designated as a Timber, Habitat or Old Growth zone. Each zone has a distinct set of management priorities, targets for forest retention and allowable silvicultural systems. Management practices in each zone meet or exceed legal requirements.
Stocking: The proportion of an area occupied by trees, measured by the degree to which the crowns of adjacent trees touch, and the number of trees per hectare.
Sustainable Forest Management (SFM): Management to maintain and enhance the long-term health of forest ecosystems, while providing ecological, economic, social, and cultural opportunities for the benefit of present and future generations.
Timber Harvesting Land Base (THLB): The portion of the total area of a management unit considered to contribute to timber supply. The THLB is defined by reducing the total land base according to specified management assumptions.
Timber Supply Analysis: An assessment of future timber supplies over long planning horizons (more than 200 years) by using timber supply models for different scenarios identified in the planning process.
Tree farm Licence (TFL): Provides rights to harvest timber, and outlines responsibilities for forest management, in a particular area.
Variable Retention (VR): A relatively new silvicultural system that follows nature's model by always retaining part of the forest after harvesting. Standing trees are left in dispersed and/or grouped patterns to meet objectives such as retaining old growth structure, habitat protection and visual quality. Variable retention retains structural features (snags, large woody debris, live trees of varying sizes and canopy levels) as habitat for a host of forest organisms. There are two main types of variable retention: dispersed retention, which retains individual trees scattered throughout a cutblock, and aggregate (or group) retention, which retains trees in clumps or clusters. The main objectives of variable retention are to retain a natural range of stand and forest structure and forest influence.
Visual Landscape Management: The identification, assessment, design and manipulation of the visual features or values of a landscape, and the consideration of these values in the integrated management of forest areas.
Visual Quality Objective (VQO): An approved resource management objective that reflects a desired level of visual quality based on the physical and sociological characteristics of the area; refers to the degree of acceptable human alteration to the characteristic landscape.
Wildlife Tree, Wildlife Tree Patch (WTP): A standing live or dead tree with special characteristics that provide valuable habitat for the conservation or enhancement of wildlife.
Windthrow: Trees uprooted as a result of wind events.
Yarding: In logging, the hauling of felled timber to the landing or temporary storage site from where trucks (usually) transport it to the mill site. Yarding methods include cable yarding, ground skidding, and aerial methods such as helicopter yarding.