



Sustainable Forest Management Plan

North Island Timberlands Unit
BC Coastal Group
Weyerhaeuser Company

May 1, 2001

Version 2.6

Table of Contents

	Page
INTRODUCTION	4
SECTION 1	7
Sustainable Forest Management Criteria and Indicators	7
1.0 Conservation of Biological Diversity	8
1.1 Ecosystem Diversity	8
1.11 A healthy and ecologically productive forest	8
1.2 Species Diversity	9
1.21 Protection of ecological and economic productivity	9
1.3 Genetic Diversity	10
1.31 Adaptability to change	10
1.4 Management Strategy	10
1.41 Landscape level planning	10
1.42 Biodiversity conservation	11
1.43 Habitat conservation	11
2.0 Forest Ecosystem Condition and Productivity	12
2.1 Forest Health	12
2.11 Disturbance and stress	12
2.2 Ecosystem Resilience	13
2.21 Adequate regenerative capacity	13
2.3 Ecosystem Productivity	14
2.31 Biologically productive forests	14
2.4 Management Strategy	14
2.41 Fire prevention and suppression	14
2.42 Forest insect and disease control	14
2.43 Wind damage	15
2.44 Soil degradation	15
2.45 Reforestation	15
3.0 Conservation of Soil and Water Resources	16
3.1 Physical Environments	16
3.11 Forest area	16
3.2 Soil Resources	16
3.21 Soil productivity	16
3.3 Water resources	17
3.31 Stream water quality	17
3.4 Management Strategy	17
3.41 Soil conservation	18
3.42 Water protection	18
4.0 Forest Ecosystem Contributions to Global Ecological Cycles	18
4.1 Element Recycling Processes	19
4.11 Forest land supports ecological cycles	19
4.2 Management Strategy	19
5.0 Multiple Benefits to Society	20
5.1 Extraction Rates	20

5.11	Flow of benefits from the forest – non-timber resources	20
5.12	Flow of benefits from the forest – wildlife habitat	21
5.13	Flow of benefits from the forest – recreation and tourism	21
5.14	Flow of benefits from the forest – timber resources and community stability	21
5.2	Resource Businesses	22
5.21	Economic viability of resource businesses	22
5.3	Management strategy	23
5.31	Recreation	23
5.32	Visual impact	23
5.33	Archaeological and Cultural Heritage Sites	24
5.34	First Nations	24
5.35	Local economic benefits	24
6.0	Society's Responsibility for Sustainable Development	25
6.1	Social Goals	25
6.11	Social equity	25
6.12	Peace and harmony	26
6.13	Better quality decisions	27
6.2	Management Strategy	28
6.21	Community, stakeholder and First Nations involvement	28
6.22	Research	28
	SECTION 2	29
	Summary of BC Coastal Group Forest Management Strategy	29
	GLOSSARY	30
	APPENDIX 1	35
	2000 SFM Performance Summaries	35
	2000 Summary Report	37
	2000 Indicators and Objectives	39
	APPENDIX 2	44
	2000 SFM Indicators Data Set Report	44

INTRODUCTION

About the SFM Plan

The North Island Timberlands Sustainable Forest Management (SFM) Plan is a “road map” to current and long-term SFM performance objectives and management strategies in the North Island operating area, referred to here as the Defined Forest Area or DFA.

It is an adaptation of planning processes that have been in place for more than 35 years on the DFA. These planning processes include strategic and operational plans, analyses, standards, monitoring and public review. Management of forest lands in the Campbell River/Sayward area has continued to evolve over time in response to learning and to changes in society's values. Revised management plans, submitted at approximately five-year intervals, include objectives, management strategies and analyses of management impacts. Standards and operating plans have been updated as changes occur. Monitoring has included divisional reporting as well as Tree Farm License (TFL) 39 and corporate annual reports and compliance audits.

The results of the public participation processes over the past years have contributed to the development of the goals, indicators and objectives. Since 1998, the North Island Woodlands Advisory Group (NIWAG) has helped to further develop the SFM performance framework for the DFA. Ongoing public review and input is provided by NIWAG, TFL Management Plan and operational plan reviews, and through other processes related to specific land use issues such as landscape unit planning and community water supply.

North Island managers and employees understand and follow the values, goals, objectives and management practices for achieving SFM on the DFA, as described in this document. The SFM Plan is an evolving document, which is reviewed with NIWAG on an ongoing basis and revised to reflect changes in the forest and local community. In particular, this plan will evolve to incorporate the Weyerhaeuser BC Coastal Group's forest management strategy directed at phasing in new Variable Retention silviculture systems⁽¹⁾.

The SFM Plan includes this introductory overview and three sections:

- [Section 1](#) North Island's Year 2001 SFM values, goals, indicators and objectives, with acceptable variances and management strategies. These are organized according to the Canadian Council of Forest Ministers' (CCFM) Criteria and Critical Elements for Sustainable Forest Management.
- [Section 2](#) Summary description of the BC Coastal Group's “Forest Project,” a new (1998) forest management strategy with significant implications for evolving definitions of sustainable forest management in the DFA.
- [Section 3](#) A glossary of acronyms and terms used in the plan.

The plan also includes two appendices:

- [Appendix 1](#) A summary and full report of North Island's 2000 performance.
- [Appendix 2](#) The DFA Data Set, including monitoring and reporting information for 2000, as well as historic trends for the indicators.

¹ The BC Coastal Group's “Forest Project” strategy, announced in June 1998, is on schedule to meet its target of a five-year transition from clearcutting to variable retention silviculture systems. Final definition of stewardship zones referenced in the strategy is awaiting further guidance from provincially established land use planning processes. [See Section 2.](#)

The Process for Developing the Set of Criteria and Indicators

The DFA's regulatory and management systems — and the values that they address — have been developed over several decades and are responsive to Canadian Standards Association (CSA) SFM system criteria, including the requirements for public involvement and the elements of a continual improvement process.

This SFM Plan was originally developed in 1998-99 using two main strategies:

- 1) External: NIWAG proceeded largely from a “fresh perspectives” approach, developing statements of values, goals and indicators with minimal prior reference to existing strategies.
- 2) Internal: In contrast, Weyerhaeuser staff focused mainly on identifying the existing management elements that meet CSA system requirements.

The results of these two approaches² were then merged into one consensual document. (See [Appendix 1](#) for a report on 2000 results.)

This SFM Plan Version 2.6 is the second revision to the plan. It reflects the results of a management review of the operation's 2000 performance and of ongoing discussions with NIWAG and other stakeholders.

The review process ensures that the SFM Plan is a product of continual improvement. Consistent with the two strategic approaches mentioned above, this is occurring through performance reviews, re-assignment of plan elements to more appropriate sections of the SFM organizational scheme, and new public input. The latter will find legal expression in the TFL 39 Management Plan, which is now undergoing its scheduled five-year review and revision. Because of the dynamic nature of this process, the SFM Plan should be viewed as an illustrative snapshot, rather than as a final or static document.

The indicators in the plan are numbered from (1) to (43). The same numbering is retained throughout the document and in its appendices.

Progress towards some goals could not be measured by quantifiable indicators. In those cases, current performance is evaluated through qualitative assessments of, for example, stakeholder processes, management programs, communications initiatives, etc.

Links to Management Plans and Operational Plans

Figure 1 shows the links between operational planning and TFL Management Plans with the BC Forest Practices Code (FPC). Similar processes and links occur in a less formal manner in the MF 19 portions of the DFA.

The SFM Plan is an umbrella plan that links higher level plans such as the Management Plan with operational plans. The SFM Plan reflects the objectives, management strategies and reporting structure of Management Plans. Likewise it is influenced by other higher level plans such as the Vancouver Island Land Use Plan and by legislation such as the FPC Act.

² Despite the differences in the two strategies, neither was a pure approach. Most NIWAG members were well informed in the relevant concepts and issues as a result of their previous participation in land use and forest management decision-making processes. And, several of the Weyerhaeuser staff in the exercise were also key participants in the 1997-98 review of corporate forest management practices that led to creation of the “Forest Project.” Those circumstances are reflective of the extensive history of public involvement and continual improvement within the DFA.

Figure 1 shows the flow of input and direction to operational plans, including Forest Development Plans and Silviculture Prescriptions. It does not show the feedback loops of monitoring and adaptive management that occur from operations to the management plans and other higher level plans.

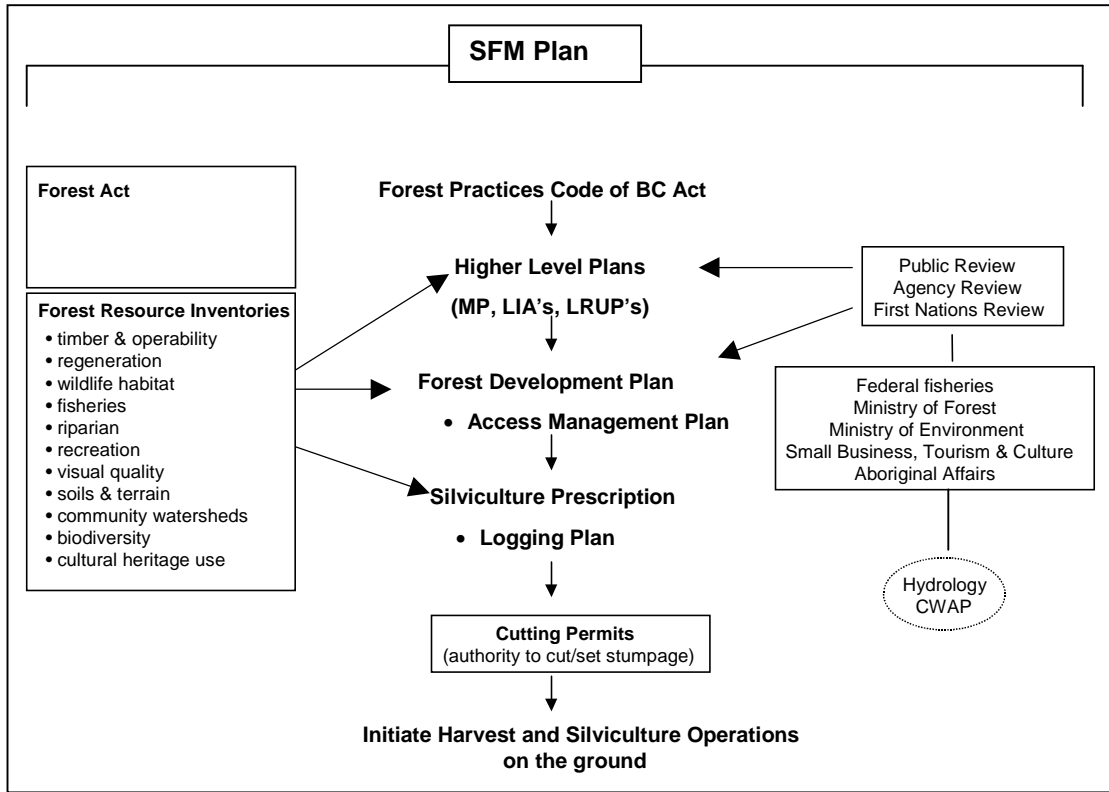


Figure 1: Links between Plans (TFL - with Forest Practices Code)

SECTION 1

Sustainable Forest Management Criteria and Indicators

This section of the SFM Plan describes North Island's SFM Values, Goals, Indicators and Objectives for the year 2001, as developed in conjunction with and approved by the North Island Woodlands Advisory Group (NIWAG). As appropriate, an Acceptable Variance is provided for each Objective. The section is organized according to the Criteria for Sustainable Forest Management, which was developed by the Canadian Council of Forest Ministers and incorporated into the Canadian Standards Association Sustainable Forest Management standard (CAN/CSA-Z809-96).

As further explanation of the organization of this section:

- The Criteria ([e.g., below: 1.0: Conservation of Biological Diversity](#)) and Critical Elements ([e.g., 1.1: Ecosystem Diversity](#)) and their accompanying statements are derived from *Defining Sustainable Forest Management: A Canadian Approach to Criteria and Indicators* (Canadian Council of Forest Ministers, Ottawa, 1995).
- The subsidiary Values ([e.g., 1.11: A healthy and ecologically productive forest](#)), Goals, Indicators, Objectives and Acceptable Variances were developed for this plan during discussions among NIWAG members, North Island Timberlands staff and other BC Coastal Group staff.

As used in this plan:

- Goals are the conditions that are desired to be sustained or attained in the long term.
- Indicators are the means by which performance relative to a Goal is measured. (A more detailed explanation of the Indicators in this section, as well as an explanation of the procedures for data collection and historic performance is in Appendix 2.)
- Objectives are the 2001 performance targets representing progress towards the Goals; they are frequently expressed as a level of an Indicator.
- Acceptable Variances specify the range of performance results (+ or – relative to the Objective) that is deemed to be an acceptable outcome. A result outside this range does not always indicate unacceptable performance. (For example, it could reflect: the impact of an uncontrollable event, such as a natural disaster; the fact that the objective was based on poor quality or inadequate data; the effects of a responsible choice between two competing objectives; or the progress toward a future level of performance.) A result outside the Acceptable Variance range does, however, require review, assessment and, possibly, a revision of either the objective or management practices.

North Island's performance against this plan is subjected to on-going monitoring and to annual review and assessment by North Island management and NIWAG.

1.0 Conservation of Biological Diversity

Biological diversity is conserved by maintaining the variability of living organisms and the complexes of which they are part.

1.1 Ecosystem Diversity

Ecosystem diversity is conserved if the variety and landscape-level patterns of communities and ecosystems that naturally occur on the DFA are maintained through time.

1.11 A healthy and ecologically productive forest

Goals:

- Maintain ecosystem diversity at quantitative and qualitative levels that are adequate to support viable populations of existing species.

Indicators:

The indicator set measures impacts on ecosystem diversity at the landscape level by examining changes in the forest's age class distribution and species composition, and at the harvest stand level by monitoring the quantity and distribution of retained forest area.

(1) Pct of primary, secondary and tertiary species (2nd growth)

Objective: Maintain percentages of second growth species that are comparable to those in the historic baseline inventory.

Acceptable Variance: ± 20% by species.

(3) Pct of forest area more than 60 years old

Objective: Sustain a minimum of 36%.

Acceptable Variance: 36% or greater

This indicator will be refined as the Forest Project (See Section 2) proceeds. The intent is to measure forest areas that will contribute structural diversity (including snags, coarse woody debris and variation in size) to the forest landscape.

(11) Forest age class distribution

Objective: The forest age class distribution has historically been implicit in the AAC determination. It is now being redefined through changes resulting from the Forest Project.

Acceptable Variance: Not applicable.

(22) Stand level retention in openings as a percent of total opening area (annual average for non-clearcut openings)

Objective: ≥ 10%

Acceptable Variance: Greater than 10%

(23) Percent of total opening area harvested with non-clearcut silviculture systems

Objective: 70% of opening area harvested

Acceptable Variance: Greater than 70%

(24) Percent of annual harvest area within forest influence

Objective: 50%, non-clearcut blocks, annual average

Acceptable Variance: Greater than 50%

(25) Percent of identified High Conservation Value (HCV) areas under special management

Objective: 100%

Acceptable Variance: None

(26) Old growth (>250 years) representation by BEC variant

Objective: Meet Ministry of Forests biodiversity guidebook targets as defined by BEC variant and landscape unit

Acceptable Variance: An interim old growth deficit exists in some landscape units, as illustrated in the 1998 forest inventory

1.2 Species Diversity

Species diversity is conserved if all native species found on the DFA prosper through time.

1.21 Protection of ecological and economic productivity

Goals:

- No known species shall become endangered or threatened as a result of Weyerhaeuser management activities.
- Maintain a mix of tree species similar to the current species mix.

Indicators:

An accurate inventory of all species in the DFA is not possible. The indicator set measures changes in the prevalence of commercial tree species and in the number of identified species at risk. Free to grow commitments include reforestation with site appropriate species. The indicator set is supplemented by management programs that are designed to maintain the ecosystem diversity required for species diversity; and by effectiveness monitoring programs.

(1) Percent of primary, secondary and tertiary species (2nd growth)

Objective: Maintain percentages of second growth species that are comparable to those in the historic baseline inventory.

Acceptable Variance: ± 20% within a species.

(2) Gross volume by species of mature forest

Objective: Maintain percentages of mature species that are comparable to those in the historic baseline inventory.

Acceptable Variance: ± 20% within a species.

(4) Number of identified species at risk

Objective: Zero annual increase in number of species at risk as a result of management activities in the DFA.

Acceptable Variance: None

(8) Area that does not meet free to grow commitments

Objective: Zero ha. FTG non-compliance.

Acceptable Variance: None

Programs:

- ✧ Weyerhaeuser has reviewed the habitat requirements of vertebrate species on its tenure and has used those as a guide for key ecological attributes in the implementation of variable retention. ([See Section 2.](#))
- ✧ Weyerhaeuser is involved in monitoring pilot projects aimed at developing a comprehensive adaptive management and monitoring program in support of variable retention by 2003.

1.3 Genetic Diversity

Genetic diversity is conserved if the variation of genes within species is maintained.

1.31 Adaptability to change

Goals:

- Improve commercial values in the Timber Zone through the use of naturally superior planting stock.
- Maintain natural levels of genetic diversity.

Indicators:

The indicator set tracks maintenance of genetic diversity by measuring reforestation according to the proportions that occur through natural regeneration and through the planting of ecologically compatible seedlings; by measuring the percentage of retention in harvested areas (retained trees are a genetically consistent seed source); and by measuring the percentage of High Conservation Value areas (potentially including genetically distinct species) that are accorded special management.

(5) Pct of seed that is registered or certified

Objective: 100% of seed used in reforestation is registered or certified.

Acceptable Variance: None

(22) Stand level retention in openings as a percent of total opening area (annual average for non-clearcut openings)

Objective: $\geq 10\%$

Acceptable Variance: Greater than 10%

(25) Percent of identified High Conservation Value (HCV) areas under special management

Objective: 100%

Acceptable Variance: None

(27) Total number of trees at "free to grow" compared to planted total

Objective: Number of crop and competing trees is greater than number of trees planted (annual average)

Acceptable Variance: None

1.4 Management Strategy

1.41 Landscape level planning

Concern for sustainability of ecosystems has led to increasing demand for landscape level planning to ensure that ecosystem functioning and plant and animal habitats are conserved.

Substantial areas consisting largely of old growth forests have been reserved on inoperable or sensitive soil sites, and as riparian, wildlife and recreation reserves. These areas are described in Timber Supply Analysis reports (e.g., in the TFL 39 Management Plan).

The Forest Practices Code (FPC) requirements for landscape and stand level biodiversity have been applied within TFL 39. The Biodiversity Guidebook was issued in 1995. Recent direction from the MoF and the MoELP has emphasized old seral stage representation at the landscape level and on variation in stand structure, primarily through Old Growth Management Areas (OGMAs) and Wildlife Tree Patches (WTPs).

The MoF and MoELP have developed a Regional Landscape Unit Planning Strategy. Draft landscape units have been defined and biodiversity emphases have been assigned to these units. These plans have yet to be approved.

Weyerhaeuser is continuing to develop a capability for landscape reporting and spatial forecasting. This includes reporting by BEC (Biogeoclimatic Ecosystem Classification) variant on

reserved areas, seral (age) classes, and interior old growth and patch sizes. These reports will be useful for describing the current situation and as a basis for developing strategies to achieve landscape objectives when they are available. The recently developed spatial forecasting tool has been used to project at a strategic level the implementation of variable retention over the DFA for the next 60 years. This is being linked to a spatial habitat supply model to allow the assessment of landscape planning options on the provision of future habitat.

1.42 Biodiversity conservation

In June 1998, BC Coastal Group (then MacMillan Bloedel) announced a new forest management strategy (commonly called the Forest Project), which includes conservation of biodiversity as a primary objective. Key components include phasing out clearcutting in favor of 100% variable retention by 2003 and an increase in conservation of old growth forests and wildlife habitat on BC lands managed by the company. Section 2 includes a fuller description of the Forest Project.

Strategies include:

- Old-growth stewardship zones will include additional reserves of old-growth forest. Variable retention will ensure that a diversity of forest structure – including snags, wood debris and live trees of various sizes and in various patterns – is well distributed across the forest landscape.
- Variable retention and stewardship zones will provide additional means and flexibility for achieving and often exceeding government landscape objectives for old seral representation and Wildlife Tree Patches.
- Weyerhaeuser will continue to work with MoF and MoELP staff on developing and implementing an adaptive management and monitoring program to ensure that variable retention objectives are met and that retained forest structures are effective in meeting habitat conservation objectives.
- The development and use of performance based procedures will be encouraged.
- 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. The site series information will provide assistance in landscape unit planning and operational planning.

1.43 Habitat conservation

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

Identified wildlife 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.

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.

Strategies include:

- Develop and incorporate landscape level objectives for biodiversity including wildlife habitat. This will be achieved as part of the landscape unit planning process.
- Develop management strategies for marbled murrelets goshawks and other identified wildlife according to the procedures set out in the Managing Identified Wildlife Guidebook. 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.
- 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. They include restoration of riparian habitat and recruitment of old seral forest conditions. A recent example includes trials in restoration of riparian habitat in Block 2.

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

2.0 Forest Ecosystem Condition and Productivity

Forest Ecosystem condition and productivity is conserved if the health, vitality and rates of biological production are maintained.

2.1 Forest Health

Forest health is conserved if biotic (including anthropogenic) and abiotic disturbances and stresses maintain both ecosystem processes and ecosystem conditions within a range of natural variability.

2.11 Disturbance and stress

Goals:

- Minimize stress associated with harvesting activities.
- Track and minimize losses to fire, insects and disease.
- Recognize that natural levels of disturbance and stress may be beneficial.

Indicators:

The indicator set tracks the rates of naturally occurring disturbance and stress (biologic, geologic and climatic) to establish a background rate; in comparison, it tracks the rates of operationally related disturbance and stress; it tracks reforestation success as a measure of the forest ecosystem's response to harvest related disturbance.

(6) Pct of harvested area that is reforested

Objective: Reforest 100% of the harvested area within 3 years on average from harvest.

Acceptable Variance: None

(7) Pct of opening areas occupied by permanent access structures (road, landing, pit, etc.)

Objective: Less than 7% of the area in openings to be in permanent access structures (annual average).

Acceptable Variance: +1% (i.e., 8% total).

(8) Area that does not meet free to grow commitments

Objective: Zero ha. FTG non-compliance.

Acceptable Variance: None

(9) Number and area of accidental operational caused forest fires

Objective: Zero fires and Zero hectares

Acceptable Variance: One fire and 5 hectares

(28) Number of reportable oil spills

Objective: 7 or less

Acceptable Variance: +1

(29) Natural wildfires by number and area

Objective: Less than 50 hectares.

Acceptable Variance: Fires exceeding 50 hectares are actively managed.

(30) Number of areas greater than 500 hectares at high risk of mortality due to insects or disease

Objective: Zero.

Acceptable Variance: Operation has previously identified high risk areas and implemented a strategy to manage risk prior to area exceeding 500 hectares.

(31) Naturally induced slides by area

Objective: Track area of natural slides

Acceptable Variance: Not applicable

(34) Area and percent of total slides from harvested areas or roads

Objective: Zero as a result of post 1995 activities

Acceptable Variance: None

Programs:

- ✧ Annual fire pre-organization plan for responding to emergency fire situations. [\(See 2.41 below\)](#)
- ✧ Annual overview of insect and disease issues in the DFA. [\(See 2.42 below\)](#)
- ✧ BC Coastal Group Forest Project. [\(See Section 2\)](#)

2.2 Ecosystem Resilience

Ecosystem resilience is conserved if ecosystem processes and the range of ecosystem conditions allow ecosystems to persist, absorb change, and recover from disturbances.

2.21 Adequate regenerative capacity

Goal:

- Maintain and enhance forest ecosystem condition and productivity.

Indicators:

The indicator set tracks reforestation success as a measure of sustained regenerative capacity.

(6) Pct of harvested area that is reforested

Objective: Reforest 100% of the harvested area within 3 years on average from harvest

Acceptable Variance: None

(8) Area that does not meet free to grow commitments

Objective: Zero ha FTG non-compliance

Acceptable Variance: None

(10) Area of regeneration failure

Objective: Regeneration failure on less than 5% of the current unstocked area

Acceptable Variance: Up to 10% of the area established (by planting and natural regeneration)

2.3 Ecosystem Productivity

Ecosystem productivity is conserved if ecosystem conditions are capable of supporting all naturally occurring species.

2.31 Biologically productive forests

Goal:

- Maintain the habitat for identified species.

Indicators:

See indicator sets for 1.11 Ecosystem Diversity and 1.12 Species Diversity.

2.4 Management Strategy

Weyerhaeuser's goals are to protect the forest and to maintain a healthy forest condition.

- Regenerate all harvested land promptly with appropriate species considering both silviculture characteristics and economic values.
- Limit the losses from fire through a rigorous program of fire prevention and suppression.
- Minimize losses to insects and disease through monitoring and appropriate control measures.

2.41 Fire prevention and suppression

The fire protection strategy is addressed in the Management Plans for both TFL 39 and Managed Forest (MF) 19.

Prevention and control are governed by operating policies and procedures and a series of plans. Plans are prepared for MoF approval, and North Island Timberlands maintains and deploys its own fire suppression equipment.

Fire protection activities include hazard induced logging closures, aerial and ground patrols during periods of high risk and quick initial action using fixed wing aircraft, helicopters and ground crews.

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

2.42 Forest insect and disease control

An insects and disease pest management strategy is attached to TFL 39, MP #7 and will be updated for inclusion in MP #8. Reference to parts of this strategy is also included in MF 19, MP #2. Insect infestations, disease outbreaks and associated management activities are reported in the TFL 39 Annual Report.

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

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. Federal or provincial experts will be consulted on appropriate actions.

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.

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 adelgid has been observed in the vicinity of Block 2.
- For restricting planting of Sitka spruce in medium and high hazard zones for the Sitka spruce weevil (*Pissodes strobi*)

Recently monitored insect infestations in Block 2 include the conifer sawfly (*Neodiprion* spp.) This infestation has been monitored regularly. Salvage plans were implemented in some high-risk stands in the Kunnun Drainage. By 1999, sawfly populations had collapsed in high-risk areas.

2.43 Wind damage

Activities are in place to minimize losses from wind damage. These include assessment of susceptibility to windthrow, cutblock design and management practices (treatment of edges where appropriate), monitoring of damage and recovery of downed trees where practical.

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 strategy to minimize losses from windthrow 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.

2.44 Soil degradation

Roads, landings and other compacted areas remove area from the productive forest landbase. These areas are estimated in post harvest assessments. The data are compiled and reported annually for both TFL and MF harvest areas.

Management practices are in place to ensure that impacts meet or exceed current standards, including site restoration where appropriate.

Also refer to TFL 39, MP #7 and MF 19, MP #2.

2.45 Reforestation

Restocking standards (included in TFL, MP #7 and MF 19, MP #2) specify that depending on site, Not Sufficiently Restocked (NSR) area will be reforested within two to six years after completion of logging. A measure of success has been to compare the NSR area with the average harvest

area of recent years; the objective has been to manage the NSR to be below three years of logging. These results have been reported in the TFL 39 Annual Report.

3.0 Conservation of Soil and Water Resources

Soil and water resources and physical environments are conserved if the quantity and quality of soil and water within forest ecosystems are maintained.

3.1 Physical Environments

Physical environments are conserved if the permanent loss of forest area to other uses or factors is minimized, and if rare physical environments are protected.

3.11 Forest area

Goal:

- Maintain forests as highest and best use of forest land.

Indicators:

Private forest lands sold from the DFA are subject to conversion to residential, commercial or other non-forest uses.

[\(13\)](#) Area sold out of the DFA

Objective: Zero sales of land from MF 19.

Acceptable Variance: **Review.**

3.2 Soil Resources

Soil resources are conserved if the ability of soils to sustain forest productivity is maintained within characteristic ranges of variation.

3.21 Soil productivity

Goal:

- Minimize soil degradation resulting from management activities.

Indicators:

The indicator set measures negative impacts of management activities on soil productivity.

[\(7\)](#) Pct of opening areas occupied by permanent access structures (road, landing, pit, etc.)

Objective: Less than 7% of the area in openings to be in permanent access structures (annual average).

Acceptable Variance: + 1% (i.e. less than 8%).

[\(19\)](#) FPC contraventions related to road, soil, and water management

Objective: Zero.

Acceptable Variance: None

(32) Percent of openings harvested in which soil disturbance exceeds level specified on plan

Objective: Zero.

Acceptable Variance: None

(34) Area and percent of total slides from harvested areas or roads

Objective: Zero as result of post-1995 activities.

Acceptable Variance: None

3.3 Water resources

Water resources are conserved if water quality and quantity is maintained.

3.31 Stream water quality

Goal:

- Maintain water quality.

Indicators:

The indicator set tracks changes to the current area of major water bodies. It also permanent access structures, which may pose a risk to water quality, the actual changes in water quality for selected watersheds, which could be attributable to management activities, and non-compliance with legal requirements, which could have a negative impact on water quality.

(7) Pct of opening areas occupied by permanent access structures (road, landing, pit, etc.)

Objective: Less than 7% of the area in openings to be in permanent access structures (annual average).

Acceptable Variance: + 1% (i.e. less than 8%).

(12) Area of water bodies

Objective: No change in area.

Acceptable Variance: None

(19) FPC contraventions related to road, soil and water management

Objective: Zero.

Acceptable Variance: None

(33) Water quality measurements for selected watersheds

Objective: Turbidity less than 5 Nephelometric Turbidity Units (NTU);
temperature less than 15°C

Acceptable Variance: Plus 10%

Programs:

- ✧ Weyerhaeuser compliance monitoring program (# slides / occurrences).
- ✧ Fisheries programs: stream identification.
- ✧ Water quality measurements in the Oyster River and the Tsitika River.

3.4 Management Strategy

Forest management activities can increase rates of soil erosion and affect the flow of sediment into streams and the peak flow levels in streams.

Management practices are designed to minimize these impacts. They are based on regulatory guidelines, the Coast Fish/Forestry Guidelines and standard operating procedures. Operational staff receive training for these standards and procedures, and environmental audits of operations are conducted annually.

Strategies for protection of soil and water resources are described in the Management Plans.

Since helicopter yarding systems significantly reduce impacts on soils and water resources, they are increasingly being used to access timber in sensitive areas.

3.41 Soil conservation

Forest areas are mapped by either five-class terrain stability mapping or sensitive site (ES) mapping. This information is used to identify sensitive areas for operational planning. It is also used to estimate appropriate allowances in strategic analyses (e.g., refer to TFL 39, MP #7).

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

Strategies include:

- Standard Operating Procedures have been developed and are maintained 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.

3.42 Water protection

Particular attention is focused on managing riparian areas. In the TFL, riparian reserve and management areas are implemented according to FPC requirements or better. Similar practices are applied in the MF, based on site-specific assessments and the new Private Land Forests Practices Regulation. Higher order streams (smaller streams with limited regulatory protection) are used as priority anchor points for the location of retention patches within settings.

The objective is to sustain water quality and quantity. .

Strategies include:

- Work closely with regional and community water boards regarding practices and standards in community watersheds. The Oyster River Watershed (in MF 19) and Newcastle Creek (in TFL 39) are water supply areas for local communities. Weyerhaeuser has participated in the Oyster River Watershed Management Committee for the last decade. At the request of the committee in 2000, Weyerhaeuser and Timber West completed and reviewed with the committee a watershed assessment on the Oyster River watershed.
- Coastal Watershed Assessment Procedures have so far been applied to more than 40 watersheds and basins in TFL 39 according to a priority list developed by the MoELP. Updates are completed as required and additional CWAPs will be undertaken as requested by District Managers.
- Ensure that road construction and road maintenance are to required standards.
- Aerial yarding systems (helicopter) have increasingly been used in sensitive areas to minimize road density.
- Develop and implement road deactivation plans, and further reduce erosion through dry seeding, or hydroseeding and planting. Utilize FRBC funding for watershed restoration work.

4.0 Forest Ecosystem Contributions to Global Ecological Cycles

Forest conditions and management activities contribute to the health of global ecological cycles.

4.1 Element Recycling Processes

This contribution is maintained if:

- the processes that are responsible for recycling water, carbon, nitrogen, and other life-sustaining elements are maintained;
- utilization and rejuvenation are balanced and sustained, and
- forests are protected from sustained deforestation or conversion to other uses.

4.11 Forest land supports ecological cycles

Goals:

- Maintain forests as highest and best use of forest land.
- Manage activities so as not to significantly change the total water surface in the DFA.

Indicators:

The indicator set tracks reforestation success and changes in forested land area as measures of sustained ecological cycles; the area of water bodies is significant in maintaining hydrological cycles.

(6) Pct of harvested area that is reforested

Objective: Reforest 100% of the harvested area within 3 years on average from harvest.

Acceptable Variance: None

(7) Pct of opening areas occupied by permanent access structures (road, landing, pit, etc.)

Objective: Less than 7% of the area in openings to be in permanent access structures (annual average).

Acceptable Variance: + 1% (i.e., less than 8%).

(8) Area that does not meet free to grow commitments

Objective: Zero ha of FTG non-compliance.

Acceptable Variance: None

(10) Area of regeneration failure

Objective: Current regeneration failure is less than 5% of the current area established.

Acceptable Variance: Less than 10% of the current area established.

(12) Area of water bodies

Objective: No change in area.

Acceptable Variance: None

(13) Area sold out of the DFA

Objective: Zero.

Acceptable Variance: None

4.2 Management Strategy

The uptake and storage of carbon by actively growing forests reduce global carbon dioxide levels.

North Island Timberland's forest management activities are focused on prompt reforestation of harvested areas with well stocked stands and on restricting the area that is removed from production by roads and landings (See 2.42 above).

Surface water area is a significant contributor to hydrological cycles. The current management strategy has had minimal adverse impact on the surface water area in the DFA.

5.0 Multiple Benefits to Society

Forests provide a sustained flow of benefits for current and future generations if multiple goods and services are provided over the long term.

5.1 Extraction Rates

Multiple benefits are maintained if:

- extraction rates are within the long term productive capacity of the resource base, and
- forests provide a mix of market and non-market goods and services.

5.11 Flow of benefits from the forest – non-timber resources

Goal:

- Sustain availability of commercial and non-commercial forest products (for example, berries, mushrooms, floral products, medicinal plants and aboriginal uses including cultural, spiritual and societal).

Indicators:

Ecosystem diversity (See indicators under 1.11 Ecosystem Diversity) provides the basis for the sustained availability of non-timber resources, by providing the types of habitat and physical features those resources need. A sustainable harvest level and adequate conservation of old growth forest habitat are key factors in sustaining ecological diversity. Roads allow access for the use and enjoyment of non-timber products.

(14) Annual harvest level

Objectives:	TFL: Harvest the AAC allocation over the five year cut control period. (2001 AAC is 1,223,902 m ³ .)
	MF: Achieve the annual plan. (2001 plan is 200,000 m ³ .)
Acceptable Variance:	TFL: ± 50% of the AAC on an annual basis within the five year cut control period.
	MF: ± 20% of plan.

(18) Kilometers of active road

Objective:	Retain active road network.
Acceptable Variance:	± 20%

(26) Old growth (>250 years) representation by BEC variant

Objective:	Meet Ministry of Forests biodiversity guidebook targets defined by BEC variant and landscape unit.
Acceptable Variance:	An interim old growth deficit exists in some landscape units, as illustrated in the 1998 forest inventory.

5.12 Flow of benefits from the forest – wildlife habitat

Goal:

Maintain ecosystem diversity at quantitative and qualitative levels sufficient to support viable populations of existing species.

Indicators:

(See indicators under 1.11 Ecosystem Diversity)

5.13 Flow of benefits from the forest – recreation and tourism

Goal:

- Forest management activities respect significant recreation and tourism features and user requirements.

Indicators:

The indicator set tracks forest access, company-maintained recreation sites and the special management of HCV areas, which may include important recreation and tourism features. An active and broadly representative advisory group will supply continuing input into tourism and recreational requirements.

(17) Number of recreation sites maintained

Objective: Continue maintenance of the 5 existing sites

Acceptable Variance: None

(18) Kilometers of active road

Objective: Retain active road network

Acceptable Variance: $\pm 20\%$

(20) Advisory group active membership

Objective: All sectors are represented

Acceptable Variance: None

(25) Percent of identified High Conservation Value (HCV) areas under special management

Objective: 100%

Acceptable Variance: None

5.14 Flow of benefits from the forest – timber resources and community stability

Goals:

- The harvest level is based on the long-term productivity of the landbase and contributes to long and short-term community stability.
- The community receives a fair share of benefits and participates in management planning.
- Maximize work year for employees harvesting the cut.

Indicators:

The “fairness” of shared benefits is not determinable by any set formula. North Island’s annual harvest and the subsequent distribution of sales revenues are tracked for assessment and discussion. “Days haul wood” is a measure of the total number of days work for most employees. Advisory group active membership and compliance with required public consultation processes track the opportunities for public participation in planning.

(14) Annual harvest level

Objectives:	TFL: Harvest the AAC allocation over the five year cut control period. (2001 AAC is 1,223,902 m ³ .) MF: Achieve the annual plan. (2001 plan is 200,000 m ³ .)
Acceptable Variance:	TFL: $\pm 50\%$ of the AAC on an annual basis within the five year cut control period MF: $\pm 20\%$ of plan

(20) Advisory group active membership

Objective:	All sectors are represented
Acceptable Variance:	None

(35) Distribution of revenues by percentage

Objective:	Track distribution
Acceptable Variance:	Not applicable

(36) Compliance with required public consultation processes

Objective:	100%
Acceptable Variance:	None

(37) Days haul wood

Objective:	214 days in 2001
Acceptable Variance:	Includes shutdown due to issues outside the control of the operation (including strike, lockout, weather, markets, etc.).

5.2 Resource Businesses

Multiple benefits are maintained if forests provide a mix of market and non-market goods.

5.21 Economic viability of resource businesses

Goals:

North Island Timberlands:

- pays a fair economic rent to land owner;
- is profitable;
- produces products that satisfy market demand, and
- contributes to Weyerhaeuser's vision to be the best forest products company in the world.

Indicators:

North Island's economic viability is tracked according to annual harvest, profitability and the distribution of sales revenues. Safety performance and an independently certified SFM system are key measures of responsible management.

(14) Annual harvest level

Objectives:	TFL: Harvest the AAC allocation over the five year cut control period. (2001 AAC is 1,223,902 m ³ .) MF: Achieve the annual plan. (2001 plan is 200,000 m ³ .)
Acceptable Variance:	TFL: $\pm 50\%$ of the AAC on an annual basis within the five year cut control period MF: $\pm 20\%$ of plan

(15) North Island Timberlands margin

Objective: \$5.19/m³ for 2001
 Acceptable Variance: Greater than 100% of \$5.19/m³.

(16) Recordable Incident Rate

Objective: 6.0 for 2001
 Acceptable Variance: Less than 6.0

(35) Distribution of revenues by percentage

Objective: Track distribution
 Acceptable Variance: Not applicable

(38) Maintenance of a certified SFM system

Objective: Maintain SFM certification.
 Acceptable Variance: None

5.3 Management strategy

5.31 Recreation

North Island recognizes and supports the responsible use of forests for recreation activities. The DFA provides varied recreational opportunities for both local residents and visitors to the area. Recreation strategies are included in both TFL and MF management plans. Several recreation sites have been developed and maintained by Weyerhaeuser, and harvesting activities are restricted in some areas because of recreation and visual landscape values.

Public access is available throughout the DFA. Some restrictions are applied, especially in active logging areas, for safety reasons and protection of equipment. Access is limited during periods of high fire hazard.

North Island's strategy is to:

- Continue to work with the MoF and local residents to develop appropriate strategies 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 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. North Island Timberlands in cooperation with the Campbell River District (MoF) and local caving groups have developed Standard Operating Procedures for karst management.

5.32 Visual impact

North Island's objective is to reconcile where possible the harvesting of trees with the visual landscape.

The strategy is to:

- Maintain visual landscape inventories.
- Recognize 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.

5.33 Archaeological and Cultural Heritage Sites

North Island will respect known sites of historic and cultural significance and account for such sites in strategic analysis.

Strategies include:

- Review operational plans with local people to identify areas in which cultural resources of potential interest 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 determine an appropriate accounting for cultural heritage sites in the MP #9 analysis.

5.34 First Nations

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

Strategies include:

- Weyerhaeuser is currently developing business relationships and opportunities with several First Nations in TFL 39. These relationships will be based on sound business practices. The current focus is on capacity building (training – development of skills).
- In 2000, Weyerhaeuser submitted a proposal to government seeking to recover the 5% reduction in crown AAC resulting from the transfer of tenures from MacMillan Bloedel at the time of acquisition. A major component of this proposal centered on building enduring business relationships with First Nations. Although that proposal has now been rejected, exploratory discussions on economic cooperation initiated with several First Nations during the period of consideration are continuing.
- First Nations partners are included in the FRBC Multi-Year Agreement. First Nations partners in TFL 39 currently include the Sliammon, Kwakwilt 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. In some operations, band members are employed and trained to assist with this process.
- First Nations representatives participate in NIWAG and in other public review and input initiatives.

Cultural Heritage – See Part 5.33 on archaeological and cultural heritage sites.

5.35 Local economic benefits

Employment in the DFA is important to the economic health of the local communities, particularly Sayward and Campbell River. In 2000, North Island Timberlands operations provided more than 100,000 days of employment for direct company employees.

Community economic and employment strategies include:

- North Island managers are responsible for developing relationships with local communities, including First Nations.
- North Island will move towards achieving a work force that broadly reflects the demographics of local communities.

- 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.

A comprehensive review of management strategies and operations in 1997-98 led the company to reaffirm its commitment to the solid wood products industry in British Columbia.

Weyerhaeuser's goal is to be the best forest products company in the world. This includes attaining high standards in safety, environmental responsibility and business success.

Strategies to achieve these goals include:

- A dedicated effort to improve safety in the work place.
- Restructuring of operations to reduce overhead costs.
- The Forest Project forest management strategy, which was announced in June 1998 in response to market and general public concerns. Key components include phasing out of clearcutting over a five-year period to be replaced by variable retention, conservation of more old growth forest, and SFM certification. It is expected that a positive market response to the Forest Project will help to stabilize short-term harvest and employment levels in local communities.

Weyerhaeuser will continue the practice of managing TFL 39 on a block basis in response to local economic concerns including employment opportunities. The current AAC for TFL 39 is allocated by block (including Block 2), and analysis for MP #8 will similarly be on a block basis.

Economic benefits include employment, wages and payments to government, including stumpage fees and other taxes. Records for these are compiled monthly by North Island.

The financial health of the North Island Timberlands operation relates directly to the economic health of the local community. A measure of financial health is the margin (revenue minus costs) that the operation achieves. North Island reports this measure monthly.

The capacity for timber production is indicated by the AAC allocation to TFL 39, Block 2 and annual plans for MF 19 areas. Actual harvest can be compared to these numbers. Substantial variation can occur on an annual basis largely because of changes in market conditions.

6.0 Society's Responsibility for Sustainable Development

Society's responsibility for sustainable forest management requires that fair, equitable and effective forest management decisions are made.

6.1 Social Goals

Sustainable forest management requires that:

- forests are managed in ways that reflect social values, and management is responsive to changes in those values;
- duly established Aboriginal and treaty rights be respected;
- the special and unique needs of Aboriginal peoples are respected and accommodated in forest management decisions;
- the decision making process is developed with input from directly affected and local interested parties;
- decisions are made as a result of informed, inclusive, and fair consultation with people who have an interest in forest management or are affected by forest management decisions, and;
- collective understanding of forest ecosystems, values, and management is increased and used in the decision making process.

6.11 Social equity

Goals:

- Ensure mechanisms are available to allow for fair and effective decision making.
- Respect treaty rights and meet legal requirements regarding aboriginal communities.
- Effectively facilitate participation of aboriginal communities in SFM.

Indicators:

Advisory group active membership and compliance with required public consultation processes track the opportunities for public participation in planning. North Island has a special duty to undertake an information sharing and referrals program with First Nations in support of the Crown's obligation for consultation. Where they exist, compliance with formally negotiated treaties and interim measures agreements is a legal obligation. Partnership agreements with First Nations are a measure of the effectiveness of relationship building.

(20) Advisory group active membership

Objective: All sectors are represented

Acceptable Variance: None

(36) Compliance with required public consultation processes

Objective: 100% compliance.

Acceptable Variance: None

(39) Compliance with treaty settlements and interim measures agreements

Objective: 100% compliance.

Acceptable Variance: None

(40) First Nations information sharing and referrals program

Objective: Annually review forest development plan with First Nations.

Acceptable Variance: None

(41) Existence of an effective First Nation partnership agreement

Objective: 100% acceptance of practices and management by First Nations.

Acceptable Variance: None

6.12 Peace and harmony

Goals:

- Understand and respect aboriginal values as to management of the TFL.
- Ensure access to old growth cedar for traditional, cultural and ceremonial use in perpetuity.

Indicators:

The process for understanding and respecting aboriginal values is based on mutually agreed information sharing and referrals programs and in First Nations' participation in the advisory group. Sustained availability of old growth cedar is measured by the old growth inventory and by planting.

(2) Gross volume by species of mature forest

Objective: Maintain percentages of mature species that are comparable to those in the historic baseline inventory.

Acceptable Variance: $\pm 20\%$ within a species.

(20) Advisory group active membership

Objective: All sectors are represented

Acceptable Variance Not applicable

(21) Planting by species (compared to harvest)

Objective: Plant cedar in proportion to cedar harvest (over a 10-year period)

Acceptable Variance: $\pm 20\%$ within old growth frequency

(40) First Nations information sharing and referrals program

Objective: Annually review forest development plan with First Nations

Acceptable Variance: None

6.13 Better quality decisions

Goals:

- Ensure mechanisms are available for fair and effective decision-making.
- Support forest education activities.
- Collect and communicate information that leads to better quality decisions.
- Support research activities.

Indicators: The activities that lead to better quality decisions are tracked through advisory group active membership, North Island compliance with required public consultation processes, and other public education, communications and consultation programs. Support for research activities is described in appropriate documentation.

(20) Advisory group active membership

Objective: All sectors are represented

Acceptable Variance: None

(36) Compliance with required public consultation processes

Objective: 100% compliance

Acceptable Variance: None

(42) Public education, communications and consultation program

Objective: 100% compliance with Plan

Acceptable Variance: None

(43) Corporate and operational research activities

Objective: Program linked to strategic and operational issues

Acceptable Variance: Not applicable

Programs:

- ✧ Kwakiutl Laich-Kwil-Tach Nations Partnership Agreement.
- ✧ North Island Woodlands Advisory Group.
- ✧ Public education programs.
- ✧ Research programs including:

- ∞ The Montane Alternative Silvicultural Systems (MASS) project located in the MF 19 portion of the DFA.
- ∞ The Enhanced Forest Management Pilot Project (EFMPP) project located in the TFL portion of the DFA.
- ∞ The Weyerhaeuser Growth and Yield program includes installations in the DFA.

6.2 Management Strategy

6.21 Community, stakeholder and First Nations involvement

Public participation processes are central to achievement of SFM goals. The objective is to provide ready access for public input and stakeholder involvement in our management process.

- The North Island Woodlands Advisory Group (NIWAG) currently includes 13 community representatives who provide input on an ongoing basis. NIWAG plays a central role in the development of this plan by identifying local values and goals, participating in indicator selection, and reviewing and commenting on performance results. 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.
- There is a 25 year history of public involvement in the DFA. The process for developing MP #8 for TFL 39 is under way. This includes public review at different stages in preparation of the plan. Operational plans in TFL 39 are available for public review, and dialogue occurs with special interest groups such as cavers, other recreational users and the Oyster River Watershed Management Committee.
- Representatives of local First Nations are participating in NIWAG. The TFL 39 MP #8 process includes sending invitations to First Nation groups to discuss management issues, and Forest Development Plans are referred to local groups for input. North Island has a partnership agreement with First Nations for carrying out silvicultural work, training forest technicians, developing joint ventures and supplying forest products for cultural uses.
- Operational planning to identify Cultural Heritage Resource sites and to develop appropriate management prescriptions occurs according to the FPC and the Heritage Conservation Act. The strategy is summarized in the Statement of Management Options, Objectives and Procedures for TFL 39, MP #8.

6.22 Research

Two major research projects are located in the DFA:

- The Montane Alternative Silvicultural System (MASS) Project located in the MF 19 portion of the DFA is a multi-agency cooperative testing new approaches to harvesting and regeneration. Overall objectives are to test alternative silvicultural systems for coastal montane forests, document the operational costs and feasibility and study the biological and silvicultural impacts. There are 21 integrated research studies investigating many aspects of this long-term experiment.
- Weyerhaeuser has been actively involved in the provincially endorsed Enhanced Forest Management Pilot Project (EFMPP) in Block 2 of TFL 39. The EFMPP, which is funded by FRBC, focuses on spatial forecasting and analysis of variable retention and the development and implementation of an adaptive management and monitoring program. The results of this initiative will assist in projecting the impacts of management and in developing management strategies.

Other research projects are summarized in the "Reporting to Canada Customs and Revenue Agency," the "Summary of the Second Year Critique Workshop on the Weyerhaeuser BC Coastal Forest Project," and in Section 2 below, "Summary of BC Coastal Group Forest Management Strategy."

SECTION 2

Summary of BC Coastal Group Forest Management Strategy (The Forest Project)

Year 2000 report pending

Glossary

Acronyms used in this document

AAC	Allowable Annual Cut
BEC	Biogeoclimatic Ecosystem Classification
CCFM	Canadian Council of Forest Ministers
CSA	Canadian Standards Association
CWAP	Coastal Watershed Assessment Procedure
DFA	Defined Forest Area
EMS	Environmental Management System
FDP	Forest Development Plan
FPC	Forest Practices Code
FRBC	Forest Renewal British Columbia
GIS	Geographic Information System
HCV	High Conservation Value
ISO	International Organization for Standardization
MoELP	BC Ministry of Environment, Lands and Parks
MF	Managed Forest
MIR	Medical Incident Rate
MoF	BC Ministry of Forests
MP	Management Plan
NIWAG	North Island Woodlands Advisory Group
NSR	Not Satisfactorily Restocked
NTFP	Non-Timber Forest Product
NTU	Nephelometric Turbidity Unit
PSP	Permanent Sample Plot
RIR	Recordable Incident Rate
SFM	Sustainable Forest Management
SP	Silviculture Prescription
TFL	Tree Farm License
VR	Variable Retention
WTP	Wildlife Tree Patch

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.

Area Awaiting Restocking (AAR): See Not Satisfactorily Restocked.

At-risk species: See Species at-risk

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: 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.

Clearcut: An area of forest land from which all merchantable trees have recently been harvested.

Canadian Standards Association (CSA) standard: Refers to CSA Z809, a National Standard for Canada for a SFM System. It describes the components and performance objectives of a SFM system that when applied to a DFA will ensure that forest management objectives are set for the critical elements of the CCFM SFM criteria.

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.

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.

Defined Forest Area (DFA): A specific area of forest, land, and water delineated for the purposes of registration of a Sustainable Forest Management system.

Ecological cycles: Refers to the major nutrient cycles (i.e. carbon and nitrogen) and the hydrological cycle.

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 patch of retention or retained single tree.

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.

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.

High Conservation Value (HCV) area: An area in which the conservation of any of numerous social or ecological values is deemed to have an especially high priority. Harvesting in HCV areas is typically very restricted and depending on the nature of the identified value(s) may be precluded entirely. Identification of HCV areas may result from information supplied by First Nations, government agencies, company personnel or other stakeholders. (See Environmentally sensitive area.)

Inoperable lands: Lands that are unsuited for timber production by virtue of their: elevation; topography; inaccessible location; low value of timber; small size of timber stands; steep or unstable soils that cannot be harvested without serious and irreversible damage to soil or water resources; or designation as parks, wilderness areas, or other uses incompatible with timber harvest.

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.

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.

Managed Forest (MF): Forest land that is being managed under a forest management plan. North Island's MF 19 is an area of privately owned land designated for commercial forestry.

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 the North Island SFM Plan, mature is defined as forest areas established before 1864 and includes old growth

Medical Incident Rate (MIR): Number of incidents per 100 workers that require a doctor's medical attention or result in lost work time. (See Recordable Incident Rate.)

Nephelometric turbidity unit (NTU): Unit of measure for the turbidity of water. Essentially, a measure of the cloudiness of water as measured by a nephelometer. Turbidity is based on the amount of light that is reflected off particles in the water.

Non-Timber Forest Products (NTFPs): All forest products except timber, including other materials obtained from trees such as resins and leaves, as well as any other plant and animal products.

Not Satisfactorily Restocked (NSR): Productive forest land that has been denuded and has not yet been regenerated to the specified stocking 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.

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.

Red-listed: Refers to plants, animals and plant communities assessed by the BC Conservation Data Centre to be extirpated, endangered or threatened.

Recordable Incident Rate (RIR): Comparable to Medical Incident Rate, above. The former MacMillan Bloedel used MIR to measure safety performance; Weyerhaeuser Company uses RIR.

Reforestation: 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 prepare a Silviculture Prescription describing, among other things, the manner and time frame within which reforestation will be conducted.

Reserve zones: Zones where timber harvesting is not permitted.

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.

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. Smaller streams are described as "higher order" streams.

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.)

Sensitive soils: Forest land areas that have a moderate to very high hazard for soil compaction, erosion, displacement, landslides or forest floor displacement.

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.

Snag: A large, standing dead tree.

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.

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 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.

Variable Retention (VR): A relatively new approach to harvesting and silvicultural systems 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 and maintains forest and residual tree influences. 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 patches of intact forest.

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: 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.

Appendix 1

WEYERHAEUSER
NORTH ISLAND TIMBERLANDS UNIT
2000 SFM Performance Summaries



NORTH ISLAND TIMBERLANDS UNIT
Sustainable Forest Management Plan
2000 Summary Report

WEYERHAEUSER NORTH ISLAND TIMBERLANDS UNIT

Sustainable Forest Management Plan

2000 Summary Report

In May 1999, North Island Timberlands became the first operation in Canada to be independently certified under the Canadian Standards Association's sustainable forest management standard. The certified area includes 230,000 hectares of public and private forest lands near the communities of Campbell River and Sayward on Vancouver Island, British Columbia.

As part of the certification program, North Island prepared a Sustainable Forest Management (SFM) Plan with input from a community advisory group. The SFM Plan includes goals related to North Island's social, economic and environmental performance. Progress towards the goals is measured by means of indicators and is reviewed annually with the objective of continually improving the operation's performance.

The North Island Woodlands Advisory Group (NIWAG) continues to play a key role in North Island's SFM program. In 2000, the group included members from: Campbell River Chamber of Commerce, Campbell River Environmental Council, District of Campbell River, Dyer Logging Co., International Wood and Allied Workers of Canada, Kwakwilt / Laich-Kwil-tach First Nation, Regional District of Comox-Strathcona, Sayward Fish and Game Club, T-Mar Industries, and the Village of Sayward. In addition, the BC Ministry of Forests participated as a contributing observer; the perspective of Comox First Nation was incorporated through the Kwakwilt / Laich-Kwil-tach representative.

The following summarizes key points from North Island's 2000 SFM report.

Economic Performance

North Island Timberlands was a significant contributor to the regional economy in 2000. It directly employed 444 individuals and paid out \$38.7 million in salaries, wages and benefits. An additional \$7.8 million was expended on local purchases. Together, these comprised 31% of total North Island revenues. Thirty-one percent of revenues went to contract operations, 19% to stumpage and other government taxes, 11% to the purchase of non-local goods and services, and 8% to operating profit.

One SFM Plan goal was to maximize the work year for employees. Market conditions allowed North Island to provide more than 100 thousand days direct employment in 2000, an increase over 1998 and 1999 employment levels.

North Island's profitability is a key measure of its economic sustainability. The operation earned an average \$6.85 per cubic metre (m³) harvested in 2000. This was 7% lower than North Island's 1999 profitability but ahead of the plan target. Profitability in 2000 continued to be entirely attributable to operations on private land. Operations on crown land incurred an average loss of \$1.50 per m³.

The annual harvest volume is a general indicator of the level of economic activity. In 2000, North Island harvested 1.5 million m³. Of that, 1.3 million m³ – 109% of North Island's Annual Allowable Cut – was harvested on crown land. Despite the 2000 harvest level, the operation remains in an undercut position relative to its total five-year harvest obligations on crown land.

North Island continued to expand the scope of its First Nations Partnership Agreement, which is designed to assist First Nation in creating economically self sufficient forest enterprises.

Social Performance

Safety is a core value for all Weyerhaeuser operations. North Island aimed to achieve a Recordable Incident Rate (RIR) of 4.8 or better in 2000. (RIR measures the number of incidents per 100 workers that require a doctor's medical attention or result in lost work time.) North Island's actual 2000 rate was 9.0. Although short of the target, this is an improvement from the rates of 9.9 in 1999, 10.8 in 1998 and 22.3 in 1997.

The advisory group also set a goal of sustaining forestry as the "highest and best use" of forest lands in the North Island area. The area converted from forest management to other uses is a negative measure of performance against this goal. Total area under management remained unchanged in 2000.

North Island maintained five free-use recreational sites in 2000, an increase of one from 1999. A public review of TFL 39's draft Management Plan #8 was held in November.

Environmental Performance

The advisory group identified numerous environmental goals related to maintenance of biodiversity; protection of endangered species; sustaining soil and water qualities; regeneration of harvested areas, etc.

Two key indicators gauge the adequacy of reforestation:

- (1) Promptness of reforestation is measured by comparing the area in which reforestation is pending to the average annual area harvested. North Island's objective is that the area awaiting reforestation should be smaller than the total area harvested in the previous 3 years. The 2000 result was equal to 1.4 years' harvest area.
- (2) The "area that fails to meet agreed reforestation targets" is a measure of reforestation success in the longer term. It is the area that fails to meet targets for stocking density or species mix at the time of the so-called free to grow assessment, which typically occur 12-13 years after harvest. This equaled 59.0 hectares in 2000 vs. an objective of 0 hectares.

Trends in the age class distribution and relative percentages of dominant tree species offer measurable indicators of biodiversity attributes. About 50% of the North Island forest is mature (pre-1864). For the past three decades, timber harvesting has proceeded at an average rate of just under one percent per year of the productive forest area. Data for annual volume harvested by species, number of seedlings planted by species, and dominant second growth species by area indicate a balanced approach to harvesting and reforestation by species. In second growth forests, the trend since 1981 has been towards increases in the percentage of Western Red Cedar (4.1 to 5 percent), Cypress (5.1 to 5.9 percent) and Douglas fir (14.2 to 16 percent), offset by a decrease in the percentage of less commercially valuable hemlock (59.5 to 57.3 percent) and balsam (16.2 to 14.9 percent).

Permanent access structures (which include roads, landings, etc.) are the primary source of increased risk for sedimentation of streams. Reflecting the Forest Practices Code Soil Conservation Guidebook standards, North Island set an objective that less than 7% of the area in 2000 openings would be in permanent access structures. The result was 4.6%, consistent with a downward trend from the level of 5.8% in 1987.

The provincial Ministry of Environment, Lands and Parks has responsibility for identifying and monitoring species at risk, and through the Conservation Data Centre it publishes an annually updated list of rare plant and animal species. North Island cooperates with government agencies in designing and implementing plans to protect habitat for identified at-risk species. The operation's objective is to place no species at risk as a result of management activities. Two new species (the lamprey and red-legged frog) were added to the CDC list in 2000, but their listing has not been linked to North Island management.

Review and Improvement

North Island's performance is subjected to an annual management review. This includes re-assessment and revision of the risk profile considering new equipment or procedures, and internal and external audit results. (The "risk profile" is a measure of the relative possibility of an accidental environmental incident for each aspect of the operation.) The review looks for opportunities to improve the environmental management system and performance on the ground.

2000 performance results were also reviewed and discussed with the North Island Woodlands Advisory Group, which resulted in a number of changes and additions to the SFM Plan for 2001. The failure to achieve profitability on crown lands remains a continuing concern. NIWAG members emphasized the importance of sustaining local economic benefits.

An independent audit of North Island's environmental management system by Quality Management Institute in August 2000 confirmed the operation's continued compliance with the requirements of the ISO 14001 and CSA Z809 certification standards. In March 2000, the Keurhout Foundation in the Netherlands recognized North Island's certification as complying with the Dutch national standards for sustainable forest management. North Island was the first forestry operation in Canada recognized by the Keurhout assessment process.

This document is a summary of North Island's performance against its 1999 Sustainable Forest Management Plan. For further information, please contact Division Forester, North Island Timberlands Unit, 250 287-5000, or write to P.O. Box 6000, Campbell River, BC V9W 5E1.



Summary Reports on Performance

2000 Indicators and Objectives

CAN/CSA-Z809-96

&

ISO-14001

North Island Timberlands Unit

As of December 31, 2000
Reported April 2001

CAN/CSA-Z809-96 Indicators Summary – 2000

#	Indicator	Objective	Acceptable Variance	2000 Result	Comments
1.	Percent of primary, secondary and tertiary species weighted by hectare (for 2nd growth)	Maintain percentage of second growth species	± 20% 1997 inventory baseline	All species within range of variance	
2.	Gross volume by species of mature forest	Maintain percentage of mature species	± 20% 1997 inventory baseline	All species within range of variance	
3.	Percent of forest > 60 years old	36%	> 36%	55.3%	
4.	Number of identified species at risk	Zero annual increase as a result of mgmt activities	None	2 new species listed	Not a result of management activities
5.	Pct of seed used that is registered or certified	100%	None	100%	
6.	Pct of harvested area that is reforested (years of equivalent NSR)	3 years	None	1.9 years	
7.	Pct of openings' area occupied by permanent access structures	Less than 7%	Less than 8%	4.6%	
8.	Area that does not meet free to grow (FTG) commitments	Zero hectares of FTG non-compliance	None	59 hectares	See note for Indicator 8 in DFA Data Set report, Appendix 2
9.	The number of forest fires caused accidentally by industrial activity	0	1 per year	1 fire	.01 hectare burned
10.	Area of regeneration failures	Current regen failure is less than 5% of current area established	Current regen failure is maximum 10% of current area established	8.9% of current area established	See note for Indicator 10 in DFA Data Set report, Appendix 2
11.	Forest inventory by percent of age class distribution	Historically implicit in AAC; to be redefined in Forest Project	Not applicable	Tracking only. See DFA Data Set report, Appendix 2	
12.	The area of water bodies	No change in area of water bodies	None	No change	
13.	Hectares sold out of DFA (MF19)	0	0	None	

#	Indicator	Objective	Acceptable Variance	2000 Result	Comments
14.	Harvest Levels	TFL: 1,223,902 m ³ MF: 153,200 m ³ Tot: 1,467,605 m ³	TFL: ± 50% MF: ± 20%	TFL: 1,337,240 m ³ = 109% MF: 181,601 m ³ = 118% Tot: 1,518,841 m ³ = 110%	
15.	North Island division margin	\$5.33		\$6.85	
16.	Medical Incident Rate	4.8	Less than 4.8	9.0	Performance improved over 1999 result of 9.9.
17.	Number of recreational sites maintained	4	Greater than 4	5	
18.	Km of active road	Retain the active network	± 20 %	3,863 km	See DFA Data Set report, Appendix 2
19.	Number of FPC contraventions related to road, soil and water management	0	None	0	
20.	Advisory group active membership	All sectors represented	None	Full representation	
21.	Planting by species compared to harvest	Plant cedar in proportion to harvest (10 year average)	± 20%	Cedar planting is 20.5% below rate of harvest (avg 1993 -2000)	Indicator 1 shows cedar increasing as percent of 2nd growth species
22.	Stand level retention in openings as pct of total opening area	≥ 10%	Greater than 10%	24.6%	
23.	Percent of total opening area harvested with non-clearcut systems	50% of total opening area harvested	40% of total opening area harvested	50.1%	
24.	Percent of annual harvest area within forest influence	50% for non-clearcut blocks	None	72.5%	
25.	Percent of identified High Conservation Value areas under special management	100%	None	100%	
26.	Old growth representation by BEC variant	Meet MoF biodiversity guidebook targets	Deficit exists as per 1998 inventory data		
27.	Total number of trees at 'free to grow' vs. planted total	Trees at FTG > planted total	None	+ 5130%	
28.	Number of reportable oil spills	≤ 7 spills	+ 1 (i.e., 8)	6 spills	

#	Indicator	Objective	Acceptable Variance	2000 Result	Comments
29.	Natural wildfires by number and area	< 50 hectares	N/A	.02 hectares	
30.	Areas > 500 hectares at high risk of mortality due to insects or disease	0	N/A	0	
31.	Area of naturally induced slides	Track for baseline	N/A	202.1 hectares	Cumulative baseline number
32.	Percent of openings in which soil disturbance exceeds plan	0	None	0	
33.	Water quality measurements for selected watersheds	Turbidity < 5 NTU Temperature < 15° C	+ 10%	Objective met	
34.	Area and percent of total slides from harvested areas or roads	Zero as result of post-1995 activities	None	3 slides totaling 0.8 hectares	
35.	Distribution of revenues by percentage	Track distribution and report	None	Objective met	
36.	Compliance with required public consultation processes	100%	None	Objective met	
37.	Days haul wood	233 days		230 days	8 days lost to labour dispute
38.	Maintenance of certified SFM system	Maintain SFM certification	None	Objective met	
39.	Compliance with treaty settlements and IMAs	100%	None	N/A	
40.	First Nations information sharing and referrals program	Annually review FDP with First Nations	None	Objective met	
41.	First Nations partnership agreement	Partnership agreement in place	None	Objective met	
42.	Public education, communications and consultation program	100% compliance to plan	None	Objective met	
43.	Corporate and operational research program	Programs linked to strategic ecosystem management and operational issues	N/A	Objective met	

ISO-14001 Indicators Summary - 2000

Indicator	Objective	2000 Result	Summary and discussion of results outside range	
Recordable Incident Rate	≤ 7.2	9.9	2.7	
Public safety incidents	0	0		
Number of reportable spills	≤ 7	6		
Number of buried fuel lines failing an inspection	0	0		
Number of sediment basins and oil/water separators not sampled as policy	0	0		
Proportion of time when Kelsey burner not operating to temperature specs	0	0		
Number of days in which Eve burn pile is operated without the forced air	0	0		
Number of landfills that did not receive annual inspection	0	0		
Number of non-licensed waste disposal/recycle companies used	0	0		
External non-compliance (tickets, fines)	0	1	1	Contravention related to timber harvesting trespass that occurred in 1999.
Internal non-compliance not addressed within time frame of the action plan	0	Shop = 1 Eng = 4 Forest = 9 Prod = 0 HR = 0	14	All issues were addressed within the appropriate environmental time frame. The feedback system was reviewed June 2, 2000 and actions to avoid this situation prescribed.
Road maintenance non-compliance not addressed within time frame of the action plan	0	0		
Number of logging or road related landslides impacting a fish stream	0	0		
Number of openings at regeneration delay that exceed site degradation limit	0	3	3	3 of 51 openings had site degradation that exceeded the limit specified on the plan at the expiry of regeneration delay. One opening has had the plan amended. Two openings are pending final deactivation and re-measurement of site degradation.

Appendix 2

WEYERHAEUSER NORTH ISLAND TIMBERLANDS UNIT 2000 SFM Indicators Data Set Report

April 2001

Defined Forest Area Data Set – April 2001
Indicators

Table of Contents

		Page
Indicator 1	Percent of primary, secondary and tertiary species (2nd growth)	47
Indicator 2	Gross volume by species of mature forest	48
Indicator 3	Percent of productive forest area more than 60 years old	51
Indicator 4	Number of identified species at risk	52
Indicator 5	Percent of seed that is registered or certified	53
Indicator 6	Percent of harvested area that is reforested	54
Indicator 7	Percent of opening area occupied by permanent access structures	55
Indicator 8	Area that does not meet 'free to grow' commitments	56
Indicator 9	Number and area of accidental operationally caused fires	57
Indicator 10	Area of regeneration failures	58
Indicator 11	Forest age class distribution	60
Indicator 12	Area of water bodies	60
Indicator 13	Area sold out of the DFA	62
Indicator 14	Annual harvest level	63
Indicator 15	North Island Timberlands margin	64
Indicator 16	Recordable Incident Rate (RIR)	66
Indicator 17	Number of recreation sites maintained	67
Indicator 18	Kilometers of active road	68
Indicator 19	FPC contraventions related to road, soil and water management	69
Indicator 20	Advisory group active membership	70
Indicator 21	Planting by species (compared to harvest)	71
Indicator 22	Stand level retention in openings as a percent of total opening area (annual average for non-clearcut openings)	72
Indicator 23	Percent of total opening area harvested with non-clearcut systems	73
Indicator 24	Percent of annual harvest area within forest influence	74
Indicator 25	Percent of identified High Conservation Value (HCV) areas under special management	75
Indicator 26	Old growth (>250 years) representation by BEC variant	76
Indicator 27	Total number of trees at 'free to grow' compared to planted total	78
Indicator 28	Number of reportable oil spills	79
Indicator 29	Natural wildfires by number and area	80
Indicator 30	Number of areas greater than 500 hectares at high risk of mortality due to insects or disease	81
Indicator 31	Area of naturally induced slides	82
Indicator 32	Percent of openings in which soil disturbance exceeds plan	83
Indicator 33	Water quality measurements for selected watersheds	84
Indicator 34	Area and percent of total slides from harvested areas or roads	85

Indicator 35	Distribution of revenues by percentage	86
Indicator 36	Compliance with required public consultation processes	88
Indicator 37	Days haul wood	89
Indicator 38	Maintenance of a certified SFM system	90
Indicator 39	Compliance with treaty settlements and interim measures agreements	91
Indicator 40	First Nations information sharing and referrals program	92
Indicator 41	First Nations partnership agreement	93
Indicator 42	Public education, communications and consultation program	94
Indicator 43	Corporate and Operational Research Program	95

Indicator 1: Percent of primary, secondary and tertiary species (2nd growth)

This indicator measures the diversity of commercial tree species, which may be an indicator of broader biodiversity attributes.

History: This indicator was developed in 1999.

Objective: Maintain percentages of second growth species that are comparable to those in the historic baseline inventory.

Acceptable Variance: $\pm 20\%$.

The 20% variance is against the inventory average derived from the DFA's 16-year database (1981-97). For example, the cumulative average percentage of Douglas fir within this time period is 14.2% of total second growth hectares. Thus, the cumulative total for Douglas Fir in future calculations should be between 11.36% and 17.04%.

Forecast: Harvest percentages are forecast in the Timber Supply Analysis and the 20 Year Plan for the TFL; and in the Strategic Timber Supply Analysis for MFU 19. A 5 to 10 year forecast of seed requirements by species is maintained for the BC Coastal Group Timberlands.

Data:

Since the 1980s, the DFA forest inventory has described each second growth stand according to the area occupied by its three most prevalent commercial species. This data includes only second growth areas that have been established since 1981.

Total species percentages for these second growth stands within the DFA are calculated by multiplying species percentages by hectare for each contributing stand, summing the hectares so derived for each species, and expressing them as percentages of the total area in the data set.

In describing only the three dominant species within each stand, this data is in most cases an understatement of actual species diversity within any given stand.

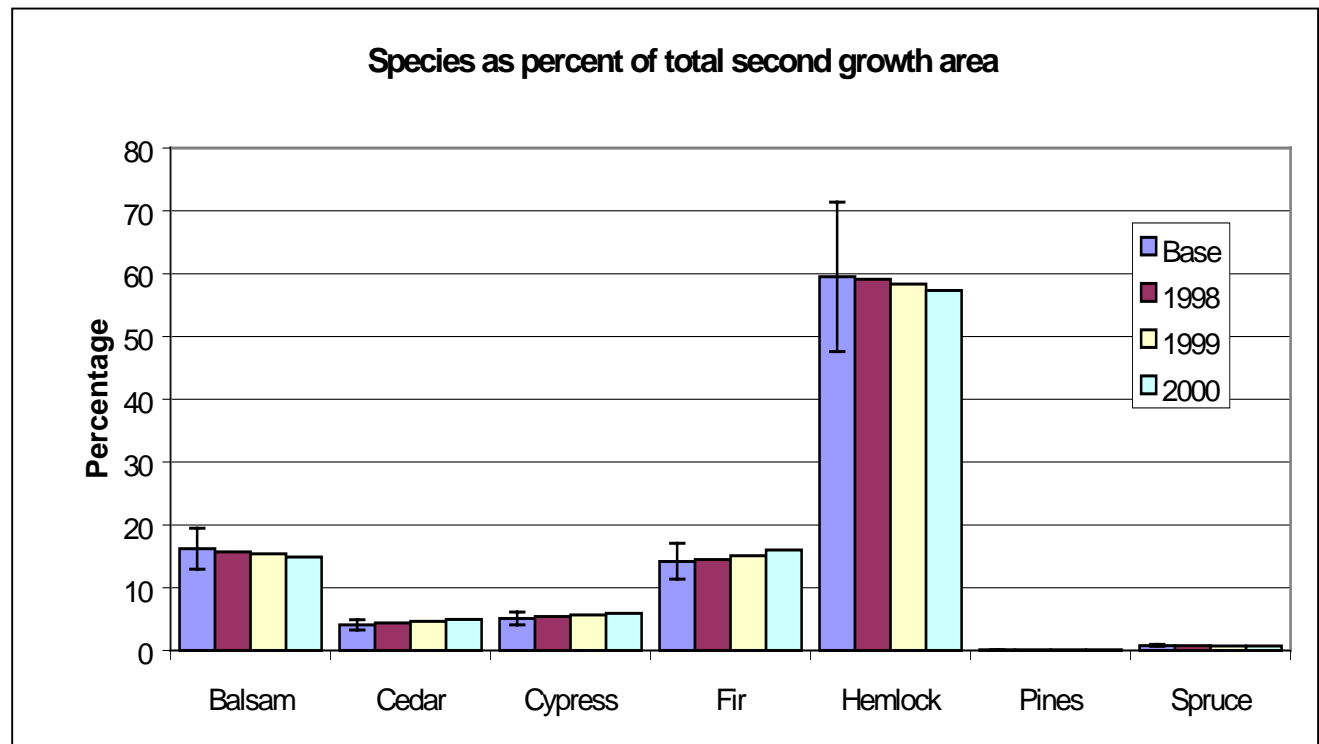
Inventory: Forest inventories have been maintained for 30 to 40 for the DFA, Block 2 of TFL 39 and Blocks 8 and 9 of MF 19. The inventory is maintained and annually updated by the Solid Wood Inventory Section. Nanaimo Woodlands maintains the forecast seed requirements by species.

Reporting: The Indicator Data Coordinator compiles the data annually and reports on the indicator performance in the annual SFM Report.

Performance:

The table below shows second growth species by area (in hectares) and the percent of total area represented by each species. All species are being retained within the $\pm 20\%$ variance from the 1997 base, with the exception of cedar, which has increased by just over 20% for the 1981–2000 cumulative year. The error bars on the graph following represent the $\pm 20\%$ acceptable variance.

Cumulative Years		Second growth species by area and percent of second growth total							
		Balsam	Cedar	Cypress	Fir	Hemlock	Pines	Spruce	Total
B A S E	1981-97	4,260	1,073	1,349	3,748	15,644	32	202	26,308
	Percent	16.2	4.1	5.1	14.2	59.5	0.1	0.8	100.0
	Variance:								
	+ 20% is	19.4	4.9	6.2	17.1	71.4	0.1	0.9	N/A
- 20% is	13.0	3.3	4.1	11.4	47.6	0.1	0.6		
1981-1998		4,329	1,213	1,485	4,000	16,279	36	208	27,550
Percent		15.7	4.4	5.4	14.5	59.1	0.1	0.8	100.0
1981 - 1999		4,380	1,330	1,624	4,283	16,569	36	210	28,432
Percent		15.4	4.7	5.7	15.1	58.3	0.1	0.7	100.0
1981 – 2000		4,462	1,486	1,772	4,780	17,120	36	211	29,867
Percent		14.9	5.0	5.9	16.0	57.3	0.1	0.7	100.0



Indicator 2: Gross volume by species of mature forest

Diversity of tree species may be an indicator of broader biodiversity attributes.

History:	This indicator was developed in 1999.
Objective:	Maintain percentages of mature species that are comparable to those in the historic baseline inventory.
Acceptable Variance:	± 20% within a species. The 20% variance is against the percentages of total volume by species as set forth in inventory data at December 31, 1997.
Forecast:	Harvest percentages are forecast in the Timber Supply Analysis and the 20 Year Plan for the TFL; and in the Strategic Timber Supply Analysis for MFU 19. A 5 to 10 year forecast of seed requirements by species is maintained for the BC Coastal Group Timberlands.

Data:

“Mature” is defined here as forest areas established before 1864. In this instance it also includes “old growth,” which is described in most MoF publications as older than 250 years for coastal forests. Gross volumes (which include a volume reduction for estimated decay) for the seven extant coniferous species within this category are established by timber cruises.

Inventory: There is 30 to 40 years of historic data maintained by the Solid Wood Inventory Section. Mature volumes are updated with each inventory revision, usually on an annual basis.

Reporting: The Indicator Data Coordinator compiles the data annually and reports on the indicator performance in the annual SFM Report.

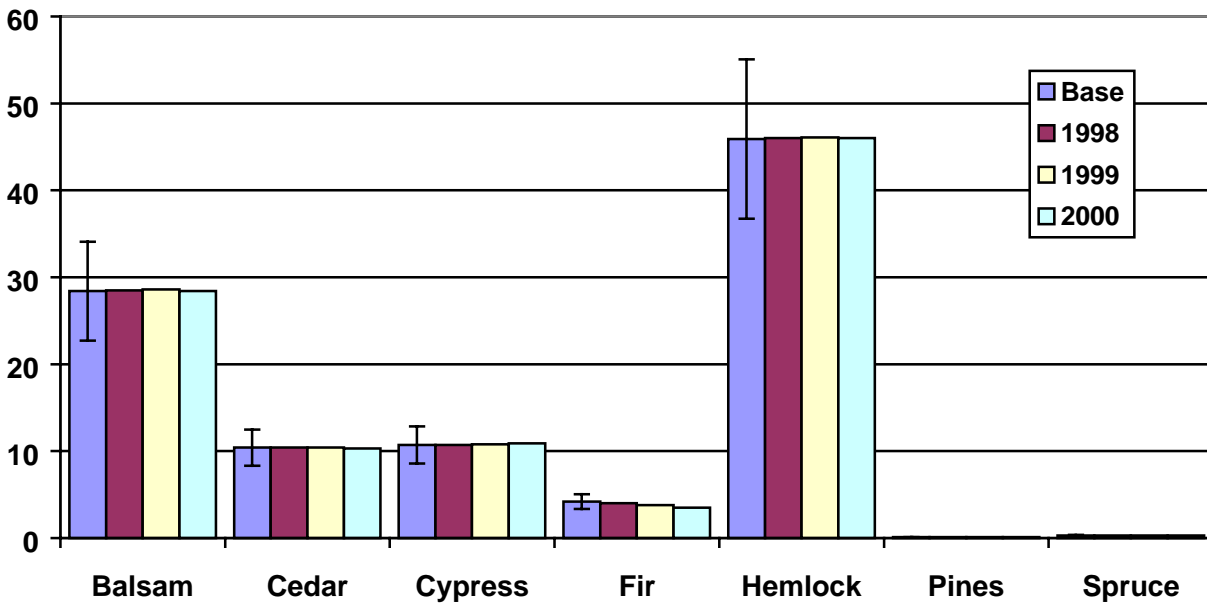
Performance:

The table below shows mature volume (in m³) by species and the percent of total mature volume that figure represents. All species are being retained within the ± 20% variance from 1997 base. The error bars on the graph following represent the ± 20% acceptable variance.

Mature Volume (000m³) by Species

Cumulative Years	Species								
	Balsam	Cedar	Cypress	Fir	Hemlock	Pines	Spruce	Total	
B A S E	1981-97	19,411	7,126	7,283	2,847	31,367	46	190	68,269
	Percent	28.4	10.4	10.7	4.2	45.9	0.1	0.3	100.0
	Variance								
	+ 20%	34.1	12.5	12.8	5.0	55.1	0.1	0.3	N/A
-20%	22.7	8.4	8.5	3.3	36.8	0.1	0.2		
1981 - 1998	19,161	7,025	7,202	2,708	30,980	45	188	67,308	
Percent	28.5	10.4	10.7	4.0	46.0	0.1	0.3	100.0	
1981 - 1999	18,844	6,869	7,135	2,505	30,426	44	180	66,003	
Percent	28.6	10.4	10.8	3.8	46.1	0.1	0.3	100.0	
1981 – 2000	18,488	6,655	7,055	2,262	29,870	422	174	64,926	
Percent	28.4	10.3	10.9	3.5	46.0	0.1	0.3	100	

Mature volume ('000 m3) by species percentage



Indicator 3: Percent of productive forest area more than 60 years old

Forest age may be an indicator of broader biodiversity attributes. The 60-year age category is selected as a significant indicator because it is the minimum age at which management treatments can begin to create the structural elements that support old growth biodiversity.

- History: This indicator was developed in 1999.
- Objective: Maintain a minimum percentage of 36% forest area greater than 60 years of age.
- Acceptable Variance: 36% or greater.
- The 36% minimum percentage is a reference to the productive forest area and does not include forests outside that area. Those so-called "non-productive" forests constitute some 14% of the DFA's total forest area and are typically more than 150 years of age.
- Forecasts: Age class distributions are forecast through the Timber Supply Analysis. Future forecast methodology for MP 8 will incorporate Forest Project targets for stand level retention.

Data:

DFA forest inventory includes age class distribution data by area for total productive forest lands. As revealed in the inventory data at December 31, 1997, more than 91% of the productive forest area greater than 60 years of age is also greater than 150 years of age. This latter category constitutes 51.8% of the total productive forest area.

Inventory: Forest inventories for TFL 39, Block 2 and MF 19, Blocks 8 and 9 are maintained by the Solid Wood Inventory Section and are normally revised annually.

Reporting: The Nanaimo Woodlands Inventory Section tracks and reports the indicator as inventory updates are completed. Data will also be reported in inventory update summaries, Management Plan summaries and the Forest Project Analysis. The Indicator Data Coordinator compiles the data annually and reports on the indicator performance in the annual SFM Report

Performance:

The DFA's forests remain well within the objective.

Year	Age (by pct of productive forest area)	
	> 60 Years	> 150 Years
1997	56.7	51.8
1999	55.3	50.2
2000	55.3	50.0

Indicator 4: Number of identified species at risk

Sustaining viable populations of extant species is a key requirement of sustainability.

History:	This indicator was developed in 1999.
Objective:	Zero annual increase in number of species at risk as a result of management activities in the DFA.
Acceptable Variance:	None
Forecast:	MoELP is responsible for forecasting.

Data:

The provincial Conservation Data Centre (<http://www.env.gov.bc.ca/rib/wis/cdc/tracking.htm>) is responsible for identifying red- and blue-listed species extant within specific ecosections of each Forest District. The Ministry of Environment Lands and Parks and the Ministry of Forests hold the responsibility for assuring that Forest Development Plans and individual cutting permits are designed to address the habitat requirements of species at risk. Procedures and measures for protecting red-listed species, in particular, are set out in the Identified Wildlife requirements of the Forest Practices Code.

In the Appendix III to "An Ecological Rationale for Changing Forest Management on MacMillan Bloedel's Forest Tenure," prepared for MacMillan Bloedel by the UBC Centre for Applied Conservation Biology (published July 16, 1998), red- and blue-listed species within the DFA are those noted under Forest District 18.

Inventory: MoELP maintains the list of species at-risk. Based on a request from the MoELP, the Division Engineer will contact a wildlife biologist to conduct an inventory.

Reporting: The Division Forester reports on the indicator performance in the annual SFM Report.

Performance:

Year	Latest CDC list reviewed	Date reviewed	New species listed		MoELP requests
			Number	Listing linked to DFA management	
2000	June 2000	Feb 28, 2001	2	No	No
1999	Aug 17, 1999	June 4, 2000	0	N/A	No

Two species were newly listed in 2000, but their listing has not been linked to forest management in the DFA. The species are:

Scientific name	Common Name	Global Rank	Prov. Rank	Prov. List
<i>Lampetra richardsoni</i> <i>var. marifuga</i>	Western Brook Lamprey	G5T1Q	S1	Red
<i>Rana aurora</i>	Red-Legged Frog	G4	S3S4	Blue

The current practice of variable retention emphasizes reserves around ponds, riparian areas, and other habitat suitable for the lamprey and red-legged frog.

Indicator 5: Percent of seed that is registered or certified

The origin of seed from which planted seedlings are grown is an indicator that individuals that may not be adaptable to the local provenance are not compromising the genetic diversity of new forests.

The MoF maintains the provincial seed registry and produces an annual report. The registration process ensures that seed zone guidelines are met and that each seed lot includes a minimum requirement for population diversity.

Certification applies to seed produced from a seed orchard. It documents the management of the seed orchard including the design and layout of the clones and parents that have contributed to the seed lot.

History: This indicator was developed in 1999.

Objective: 100% of seed used in reforestation is registered or certified.

The MoF requires that all seed used on Crown land is registered. North Island also follows this practice for seed destined for reforestation of private land.

Acceptable Variance: None.

Forecast: N/A

Data:

The DFA Data Set includes examples from the seed registry and the Weyerhaeuser seed inventory (by seed lot number) in May of 1998.

The stock inventory summary shows all the seedling (stock) requests for planting in the late summer/fall (SU for summer under the heading of Seas) and in the spring of 1999 (SP for spring under the heading of Seas).

The Seedlot/Elev column shows the seedlot registration number and the elevation level (the seedlings may be planted in an elevation band about this height – the width of the elevation band varies with species).

The other columns include:

Nur: Nursery

SPP: Species – e.g. BA is *Abies amabilis*, CW is redcedar, FDC is Douglas fir, HM is mountain hemlock, HW is western hemlock and YC is yellow cypress.

Age: The number indicates the age of the seedling (most are one year old in this summary) and whether it has been transplanted.

Type: E.g. PSB – plug styro block.

Size: Container cavity size.

Trees: Numbers in thousands.

The reforestation records for each planted area include the seedlot registration number(s).

Inventory: The province maintains the provincial seed registry. The seed inventory for the DFA is also maintained by Nanaimo Woodlands and reported to MoF. The Silviculture Forester maintains a copy of the stock inventory in the forestry file system

Reporting: The Seed Planning and Registry System is maintained by the MoF, and an annual report is produced.

Performance:

Year	Percent of seed that is registered or certified
2000	100
1999	100

Indicator 6: Percent of harvested area that is reforested

Prompt reforestation is required on all harvested land. This indicator examines the promptness of reforestation, as described below. It indicates utilization of the productive forest area of the DFA.

- History: This indicator was developed in 1999.
- Objective: Reforest 100% of the harvested area within 3 years on average from harvest.
- Acceptable Variance: None.
- Forecast: The Timber Supply Analysis incorporates the 3-year target.

Data:

Recent timber supply analyses have included an assumption of a three-year regeneration delay. The reduction in average regeneration delay during recent years is largely because of more prompt planting after harvest.

The “equivalent years of NSR” is calculated by dividing the unstocked areas (Not Sufficiently Restocked, or NSR) by the average harvest area for the last five years.

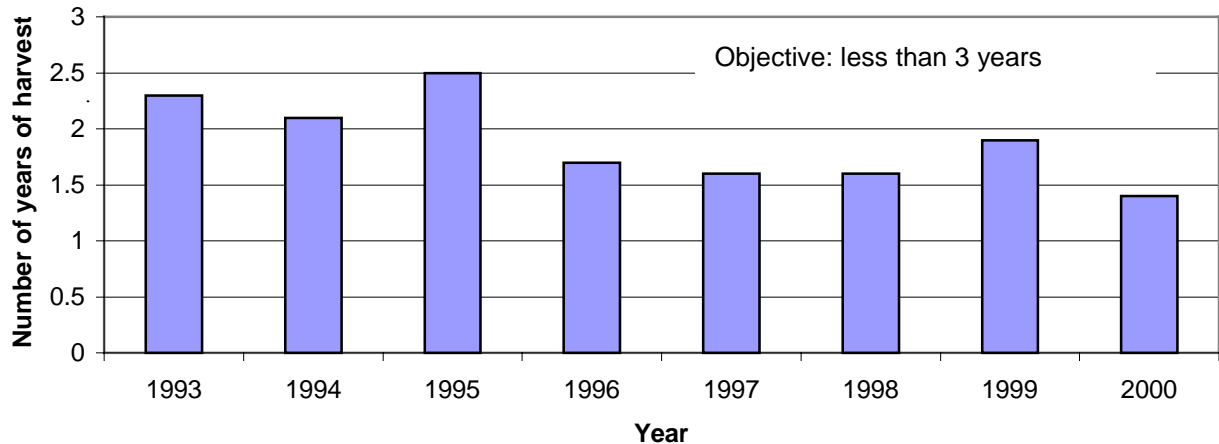
Inventory: The Silviculture Forester tracks unstocked areas in the Silviculture Database.

Reporting: The Division Forester compiles the data from the Silviculture Database and reports on the indicator performance in the annual SFM Report.

Performance:

1.4 years. Objective achieved.

NSR expressed as number of years of harvest



Indicator 7: Percent of opening area occupied by permanent access structures

This indicator measures the proportion of harvest areas that is removed from the productive forest area because of permanent access structures (roads, landings, etc.) It indicates the reduction in the potential productive area and the increased risk or potential for environmental impact, particularly sedimentation of streams.

History: This indicator was developed in 1999.

Objective: Less than 7% of the area in openings to be in permanent access structures (annual average).

This objective reflects the Forest Practices Code – Soil Conservation Guidebook standards.

Acceptable Variance: +1% (i.e. less than 8% of the area in openings)

Forecast: The forecast is the objective.

Data:

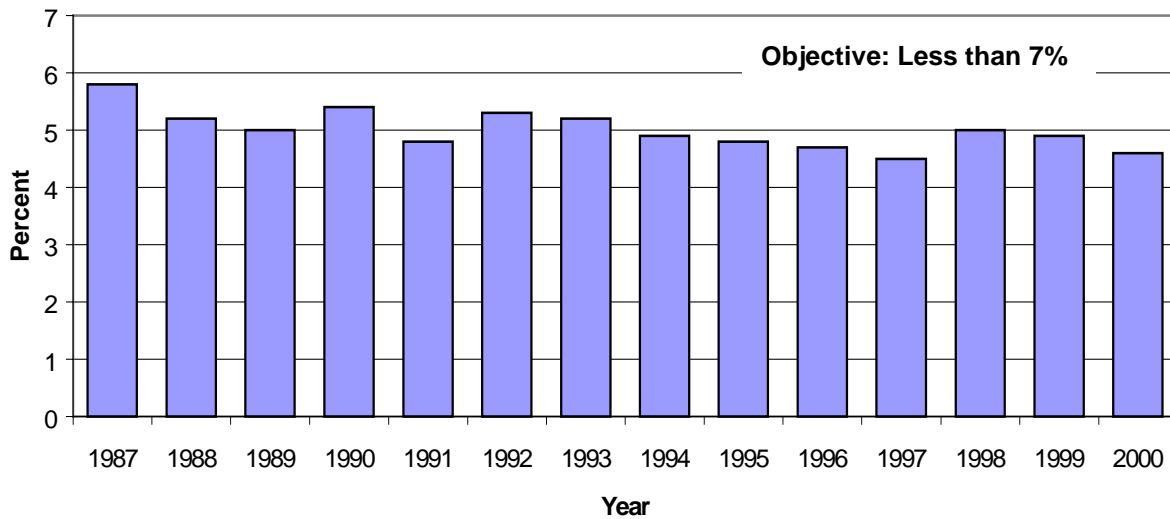
Inventory: The forestry record keeping system includes statistics on the percentage of each opening that is occupied by roads and landings. The percentage is compiled from all the openings in a given year for the DFA Data Report.

Reporting: The Division Forester tracks and reports on the indicator performance in the annual SFM Report.

Performance:

4.6%. Objective achieved.

Percent of opening areas in permanent access structures



Indicator 8: Area that does not meet 'free to grow' commitments

This indicator measures the success at achieving free to grow targets defined in Silviculture Prescriptions. It provides indications of regeneration success, of utilization of the productive area and of maintaining forest ecosystems on the DFA.

History: This indicator was developed in 1999.

Objective: Zero hectares of free to grow non-compliance.
This objective reflects requirements of the Forest Practices Code of BC.

Acceptable Variance: None.

Forecast: The Timber Supply Analysis assumes the objective level is met.

Data:

Inventory: The Silviculture Database lists free to grow commitments by standard unit within an opening.

Reporting : The Division Forester tracks and reports compliance with FTG obligations in the annual SFM Report.

Performance:

Five openings, totaling 59 hectares, did not achieve free to grow status as defined by the FPC. In four of the five blocks, when a survey was conducted to confirm the free to grow status in 1999 or 2000, a portion of the block was found inadequate and a follow-up survey in 2001 was recommended. The fifth block was awaiting a silviculture prescription amendment approval to deal with its status.

Free to Grow Non-Compliance		
Year	Openings	Ha
2000	5	59.0
1999	2	17.6
1998	0	0

Indicator 9: Number and area of accidental operationally caused fires

This indicator provides a measure of success at protecting the forest from damage by fire. Operationally caused fires are those that are initiated by management activities (e.g. operational or escaped slash fires).

- History: This indicator was developed in 1999.
- Objective: Zero accidental operationally caused fires.
- Acceptable Variance: One per year. This variance is based on historical data.
- Forecast: The objective is the forecast. This is assumed to be zero in the Management Plan forecasts. A small allowance for non-recovered timber from fire has been included in recent timber supply analyses.

Data:

The Division forester reports annually on the incidence and cause of fires and on the area burned. This includes fires resulting from operational activities. A historical record is available for TFL 39 areas. For MF 19 areas, tracking and reporting commenced in 1997.

Inventory: The Production Superintendent reports fires to the Division Forester for entry into the Silviculture Database.

Reporting: The Division Forester compiles the data from the Silviculture Database and reports on the indicator performance in the annual SFM.

Performance:

Accidental Operational Fires

Year	Number	Total area burned (ha)
2000	1	0.01
1999	1	22
1998	1	2
1997	2	
1996	1	
1995	8	
1994	7	
1993	3	
1992	1	
1991	1	
1990	1	
1989	0	
1988	3	
1987	4	
1986	1	
1985	2	
1984	2	
1983	1	

Indicator 10: Area of regeneration failures

This indicator measures the area of regeneration failure as a percentage of areas established (both by planting and naturally) each year. It is an indication of regeneration success and of utilization of the DFA's productive area.

History:	This indicator was developed in 1999.
Objective:	Current regeneration failure is less than 5% of the current area established.
Acceptable Variance:	Current regeneration failure is a maximum of 10% of the current area established.
Forecast:	Assumed to be zero in the planting forecast prepared by the division and the Management Plan forecast.

Data:

Regeneration failures may also result in changes in the inventory update, a change in a polygon description from stocked to NSR.

Inventory: The area reforested and the area that fails a survival or regeneration performance assessment is entered into the Silviculture Database.

Reporting: The Division Forester tracks and reports the data to Nanaimo Woodlands for inclusion in the Annual Report.

Performance:

Year	Area established - ha (planted and natural)	Area of regen failures (ha)	Failed area as percent of established area
2000	1500	133	8.9
1999	1195	130	10.9
1998	1448	18	1.2
1997	1554	93	6.0
1996	1875	94	5.0
1995	1852	221	11.9
1994	2345	56	2.4
1993	1687	51	3.0
1992	2544	96	3.8
1991	2105	287	13.6
1990	1704	28	1.6
1989	2188	68	3.1
1988	2278	134	5.9
1987	2278	61	2.7
1986	1462	140	9.6
1985	1257	96	7.6
1984	1301	416	32.0
1983	1352	152	11.2
1982	2061	0	0
1981	2617	204	7.8
1980	1691	208	11.0

NB – Because the area established may vary significantly from year to year, data presented in the above format does not provide a meaningful assessment of regeneration failure as compared to the actual area planted – i.e., the above data compares the area of failure on sites established in previous years to the

area established in the current year. To provide a more meaningful assessment, reporting will henceforth measure the area of regeneration failures in comparison to the years in which the failed areas were established.

For example, under this revised reporting structure the data for 2000 would be as follows:

Year	Area established - ha (planted and natural)	Area of regen failures (ha)	Failed area as percent of established area
2000	2360	133	5.6

Indicator 11: Forest age class distribution

Age class distribution is an indicator of sustainability for ecological, social and economic considerations.

- History: This indicator was developed in 1999.
- Objective: Historically implicit in AAC and being redefined as part of BC Coastal Group Forest Project.
- Acceptable Variance: N/A
- Forecast: Age class distributions are forecast as part of the Timber Supply Analysis.

Data:

Forest management in BC has proceeded in recent decades with the objective of converting the public forest from predominantly old growth to one with a large component of protected old growth and a commercially-accessible remainder distributed primarily among age classes up to the age of rotation.

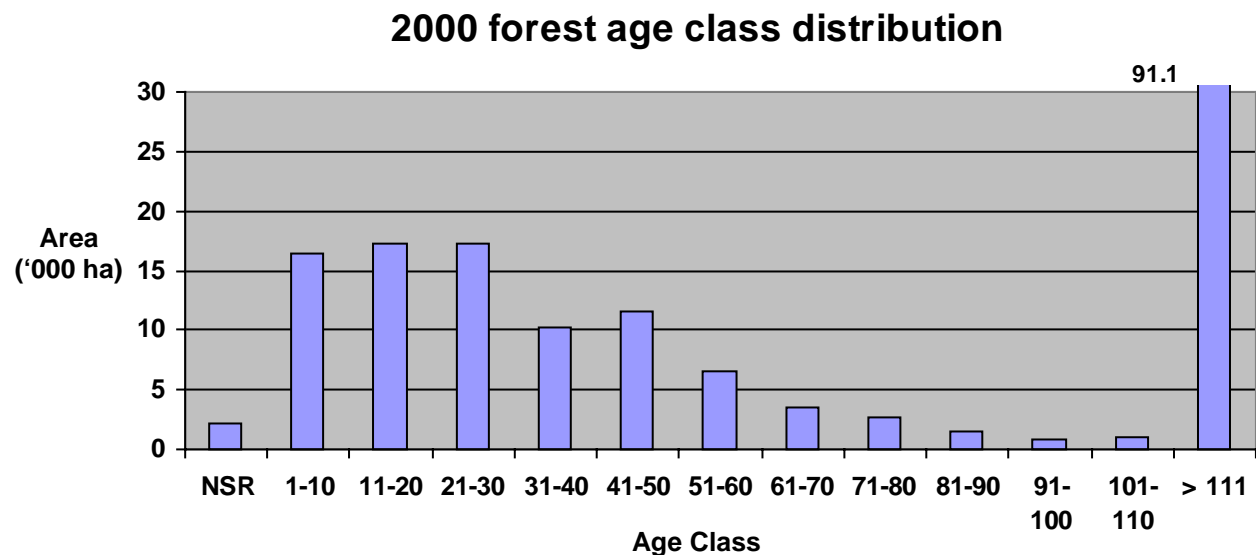
The primary instrument of this conversion has been the Annual Allowable Cut allocations established by the province’s Chief Forester with consideration for various objectives.

In June 1998, the BC Coastal Group (then MacMillan Bloedel) announced its intention to pursue a new direction with respect to forest management practices on its public and private lands. Many aspects of this new approach on crown land are subject to discussions with and approval of the provincial government. The outcome of those discussions may result in significant revisions to the objectives driving future AAC determinations.

Inventory: Nanaimo Woodlands Inventory Section maintains 30 to 40 years of historic data on age class distribution by area for total productive forest lands. This is updated generally on an annual basis. This data is located in Forest Inventory for TFL Block 2 and Forest Inventory for MFU Blocks 8 and 9.

Reporting: The Indicator Data Coordinator compiles the data annually and reports on the indicator performance in the annual SFM Report.

Performance:



Indicator 12: Area of water bodies

This indicator measures the area of lakes, wetlands and large streams in the DFA. It provides an indication of the impact of forest management on water resources.

History: This indicator was developed in 1999.

Objective: No change in area of water bodies.

Acceptable Variance: None.

Forecast: No change in area is projected.

Data:

Changes in mapping standards and in boundaries make historical comparisons difficult. Reporting was standardized in 1999 for future inventory updates.

Inventory: The Inventory Section reports (at the 1:20,000 scale) on the area of lakes, wetlands and large streams at each inventory update. This includes the inventory summaries in the TFL and MF Management Plans.

Reporting: The data is reported annually in the Forestry Inventory Revisions Report, the Management Plan and the DFA Data Set. The Indicator Data Coordinator compiles the data annually and reports on the indicator performance in the annual SFM Report.

Performance:

Year	Hectares	Comment
2000	3,359	No draining or flooding on the DFA. Difference in area from 1999 is due to the conversion of inventory data to the NAD 83 mapbase.
1999	3,754	No draining or flooding on the DFA. Inventory analysis is unavailable due to conversion of inventory to NAD 83 mapbase.
1998	3,754	No draining or flooding on the DFA. Inventory analysis is unavailable due to conversion of inventory to NAD 83 mapbase.
1997	3,754	Derived from 1997 Forest Cover Inventory on NAD 27 mapbase.

Indicator 13: Area sold out of the DFA

This indicator measures the privately owned forest land that may be transferred to another use.

History: This indicator was developed in 1999.

Objective: Zero sales of land from MF 19.

The North Island objective is to retain forest land in forest production.

Acceptable Variance: Zero forest land removed from production.

Forecast: Timberlands and Properties department and Nanaimo Woodlands are responsible for future projections. The Timber Supply Analysis assumes that no land will be sold.

Data:

Inventory: The Timberlands and Properties department tracks all land transfers. The Nanaimo Woodlands Inventory Section is responsible for updating the forest inventory, usually on an annual basis.

Reporting: The data is reported annually in the Forestry Inventory Revisions Report, the Management Plan and the DFA Data Set. The Division Forester will monitor and report on sales within the DFA.

Performance:

Year	Ha Sold	Comment
2000	0	In 1998, CEO Tom Stephens approved a land sales program that included a 169-hectare parcel in the Oyster Bay area. This area is currently for sale.
1999	4.5	A small area [4.5 ha] of industrial land [the Campbell River Marine lease] was removed from MF 19 in 1999.
1998	78.9	District Lot 38 [78.9 ha] in Discovery Passage was removed and sold in 1998. This is waterfront property and was part of a small block that was isolated from the rest of the DFA.

Indicator 14: Annual harvest level

This indicator compares actual timber harvest with harvest targets. It provides an indication of sustainability and of contribution to the local and provincial economies. The area harvested also impacts the availability of other commercial and non-commercial forest products.

History:	This indicator was developed in 1999.
2000 Objective:	For the TFL: Harvest the Allowable Annual Cut (AAC) allocation over the 5 year cut control period. For MF 19: Achieve the annual plan (153,200 m3 for 2000).
Acceptable Variance:	For the TFL: $\pm 50\%$ of AAC on annual basis, and $\pm 10\%$ over the five year cut control period. For MF 19: $\pm 20\%$ on the annual plan.
Forecast:	The Timber Supply Analysis for the TFL and Strategic Timber Supply analysis for MFU Blocks 8 and 9 forecast the harvest level.

Data:

The TFL AAC is determined every five years by the BC Chief Forester. North Island determines the MF 19 plan harvest.

Inventory: Over 20 years of historic data for the DFA is maintained by the Solid Wood Inventory Section, located in the MoF Harvest database.

Reporting: Harvest volumes are reported annually in "Official MoF Scale Report and Weyerhaeuser Timberlands Units Production". The TFL 39, Block 2 harvest is also reported in the TFL 39 Annual Report and MF 19 harvest is reported in the Annual BCAA Report.

Performance:

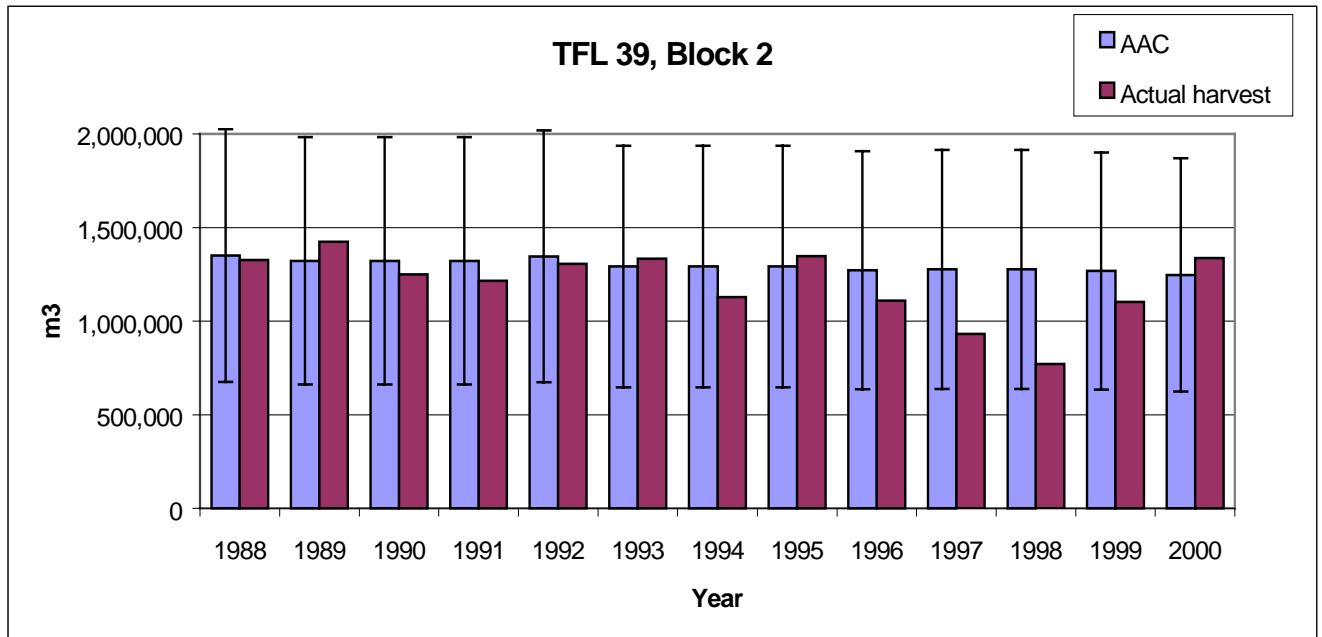
Year	MF 19			TFL 39 Block 2			Total		
	Forecast	Actual	%	AAC	Cut	%	Plan	Cut	%
2000	153,200	181,601	118	1,223,902	1,337,240	109	1,377,102	1,518,841	110
1999	200,000	238,671	119	1,269,162	1,102,437	87	1,467,605	1,341,108	91
1998	200,000	218,220	109	1,276,346	770,941	60	1,476,346	989,161	67
1997	114,000	158,856	139	1,276,346	932,125	73	1,390,346	1,090,981	78

Data:

Harvest estimates for both the TFL and MF are from official MoF scale reports.

TFL 39, Block 2:

The AAC and harvest numbers exclude the SBFEP and the one mile reserve (from 1988 to 1991) allocations and cut. They include residue. The Chief Forester will re-determine the AAC for Management Plan #8, beginning in 2001. The error bars on the graph below represent the $\pm 50\%$ acceptable variance

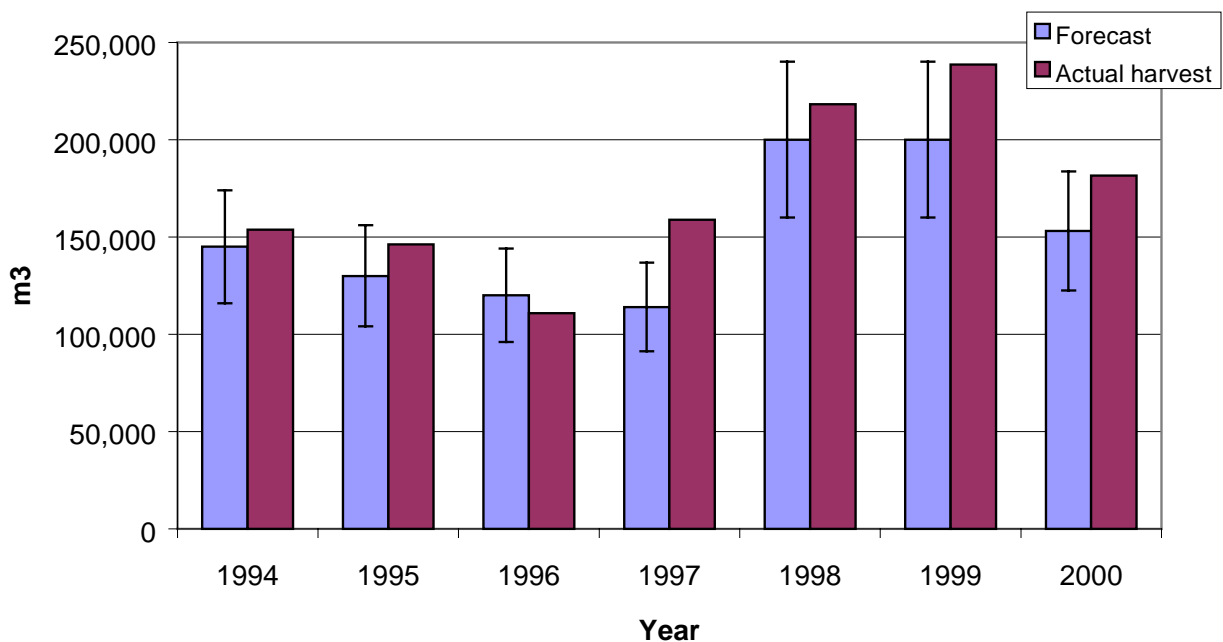


MF 19, Blocks 8 and 9:

The MF 19 plan and harvest numbers exclude residue (water scale).

The intent is to harvest the DFA for long term sustainability, allowing year to year variations in harvest rates. Plan estimates for MF 19, Blocks 8 and 9, originally totaled 150,000 m³ for 1998 but were increased to 200,000 m³ because of poor market conditions and high costs on crown lands (TFL). They were decreased to 153,000m³ in 2000. The error bars on the graph below represent the ± 20% acceptable variance

MF 19, Blocks 8 and 9



Indicator 15: North Island Timberlands margin

This indicator measures the difference between the average selling price and average costs for North Island Timberlands, including activities on both public and private lands. It provides an indication of the profitability of the operation and, implicitly, its economic contributions to the local and provincial economies.

History: This indicator was developed in 1999.

2000 Objective: \$5.33 per m³

The objective is determined on the basis of market expectations and the historic performance of the operating unit.

Acceptable Variance: At least 100% of the previous year.

Forecast: The Vice President of Timberlands sets the annual target for each operation.

Data:

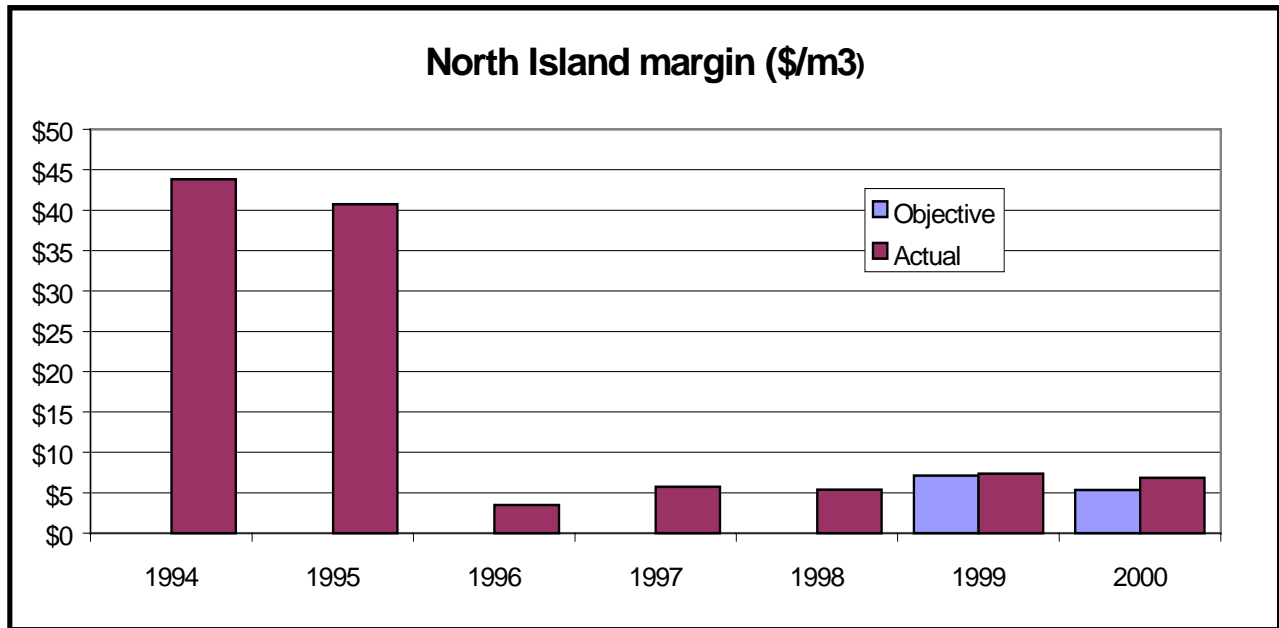
The margin is the difference between the average selling price and the average costs for the operation.

Inventory: The Divisional Financial Manager tracks and reports this indicator.

Reporting: Data on this indicator is reported in the Divisional Financial Statement.

Performance:

North Island margin was \$6.85/m³. Although the overall target objective for 2000 was surpassed, North Island continued to incur a loss on crown lands at the rate of \$1.50 per m³.



Indicator 16: Recordable Incident Rate (RIR)

This indicator measures the number of incidents per 100 workers that require a doctor’s medical attention or result in lost work time. It provides an indication of the level of North Island Timberlands commitment to safe working conditions for employees.

History: This indicator was developed in 1999.

2000 Objective: 4.8 RIR for North Island crews.

The objective is based on continual improvement and takes into consideration the historic performance of the division and Weyerhaeuser corporate commitments.

Acceptable Variance: Less than or equal to the objective.

Forecast: The objective is the forecast.

Data:

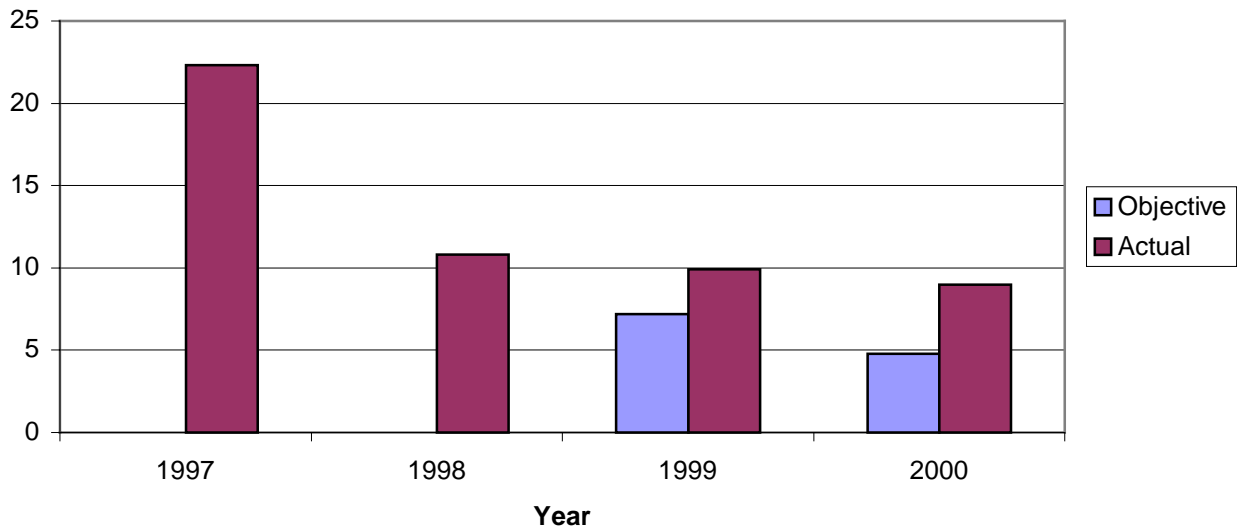
Inventory: The Human Resources Department at North Island collects information on all recordable incidents.

Reporting: The Financial Manager reports the indicator as part of the monthly financial statement.

Performance:

2000 RIR = 9.0, an improvement over 1999 but short of the objective.

Recordable Incident Rate (RIR)



Indicator 17: Number of recreation sites maintained

This indicator tracks the number of recreation sites (trails, campgrounds) maintained by North Island Timberlands. The indicator provides a measure of North Island's continued commitment to supporting some of the non-timber values on the DFA.

History: This indicator was developed in 1999.

Objective: Continue the maintenance of existing sites.

The objective is to ensure that existing recreation sites continue to be maintained in 2000.

Acceptable variance: None.

Forecast: Assumes same number of sites.

Data:

Inventory: The Division Forester is responsible for maintaining recreation sites in the DFA. This includes tracking and reporting on the sites.

Reporting: The Division Forester compiles the data from the SFM Tracking database and reports on the indicator performance in the annual SFM Report.

Performance:

The number of maintained recreation sites increased by one in 2000.

Year	Sites	Sites Maintained
2000	5	5
1999	4	4
1998	4	4
1997	4	4
1996	2	2

Indicator 18: Kilometers of active road

This indicator estimates the length of roads in the DFA, including both maintained and un-maintained roads. Retaining a “balance” of roads is important for access for forest management, recreation and other resource uses while maintaining as much land in productive use as possible. Roads are added as new areas are developed and in some areas roads are removed through debuilding. Other roads that are not required for a period, are deactivated to minimize the risk of environmental damage.

History: This indicator was developed in 1999.

Objective: Retain the active road network.

The objective is to effectively manage the active road network resulting in little change in its size.

Acceptable variance: $\pm 20\%$

Forecast: This indicator is forecast in the Management Plan.

Data:

Inventory: Data on the active road network (maintained and non-maintained roads) is maintained at a 1:20,000 scale at North Island in the Geographic Information System (GIS).

Reporting: The GIS Technician compiles the data from the GENUS System and reports on the indicator performance in the annual SFM Report. North Island also prepares an annual report on road development, summarized by the Inventory Section in the TFL 39 Annual Report.

Performance:

The 17% difference between 1997 and 2000 data results primarily from conversion to a new mapbase, rather than an actual increase in roads.

Year	Kilometers			Comment
	Maintained	Non-maintained	Total	
2000	1623	2240	3863	NAD 83 map projection
1997	1566	1718	3284	NAD 27 map projection

Indicator 19: FPC contraventions related to road, soil and water management

This indicator tracks the number of legislative non-compliance incidents on the DFA relating to road construction, soil and water. It provides a measurement, in particular, of the extent to which North Island Timberlands is effectively managing its road building practices and mitigating the potential effect of its operations on soil and water.

History: This indicator was developed in 1999.

Objective: Zero

The North Island objective is to be in legislative compliance and, therefore, to have no contraventions.

Acceptable variance: None

Forecast: The forecast is the objective.

Data:

Inventory: The Forest Legislation Compliance Database is maintained by the Weyerhaeuser legal department and is monitored on a daily basis.

Reporting: Contraventions are reported in the Forest Legislation Compliance Reporting Database, internal quarterly reports and MoF Compliance Reports.

Performance:

Year	Number of FPC contraventions
2000	0
1999	2

Indicator 20: Advisory group active membership

This indicator tracks the active functioning of the North Island Woodlands Advisory Group (NIWAG). It provides one indication of the relative success of an ongoing mechanism to allow for meaningful input from all sectors of the local community into SFM planning on the DFA.

History: This indicator was developed in 1999.

Objective: All sectors are represented

Acceptable variance: None

Any change in membership numbers must be assessed and remedied if it creates an effective gap in the adequacy of representation of the various interests on the DFA.

Forecast: Terms of Reference for the advisory group.

Data:

Inventory: The Division Forester is responsible for supporting and monitoring participation in the advisory group. There is a membership list and Terms of Reference for the advisory group.

Reporting: Minutes are recorded for each meeting that include attendance. The NIWAG membership list is maintained by the NIWAG secretary and posted on the SFM Website.

Performance:

Sector	NIWAG Membership at end of		
	1998	1999	2000
Fish and Game Club	1	1	1
First Nations	2	1	1
Ministry of Forests	1	1	1
District of Campbell River	1	1	1
Education/Youth	0	0	1
Contractor	1	1	1
Supplier	1	1	1
Village of Sayward	1	1	1
Regional District	1	1	1
Environmental Council	1	1	1
Member at Large	0	0	1
Labour	1	1	1
Chamber of Commerce	1	1	1
Total Sectors	12	11	13

Indicator 21: Planting by species (compared to harvest)

This indicator tracks the planting of species (specifically Western Redcedar) relative to the proportions removed in harvest. The objective is to ensure a sustained supply of WRC over time. Old growth cedar has traditional, cultural and ceremonial uses for First Nations.

History:	This indicator was developed in 1999.
Objective:	Plant cedar in proportion to cedar harvest (average over a 10-year period).
Acceptable variance:	± 20% of harvested cedar.
Forecast:	Silviculture Plans and Harvest Plans forecast the planting and harvest

Data:

Planting of cedar is compared to harvest of cedar over a 10-year period to avoid year to year fluctuations that can occur and to average the delay that occurs between harvest and stocking.

Number of stems planted vs. harvested volume does not yield strictly comparable data. For example, the data does not include natural regeneration; which is a significant component of cedar reforestation in many areas; further, the average size (m³ per tree) of harvested cedar trees is generally larger than that of other species. In association with other indicators, however, this data can be meaningful.

Inventory: The Division Forester is responsible for development of silviculture prescriptions and for tracking all silvicultural treatments including planting by species. The number of trees planted is entered into the Silviculture Database. Nanaimo Woodlands Inventory Section collects data annually on planting by species. Harvest by species is available in the MoF harvest database.

Reporting: The TFL 39 and MF 19 results are reported by management unit in the annual "Summary of Silvicultural Activities". The TFL 39 results are reported by block in the TFL 39 Annual Report. Scaled harvest volumes are reported by Solid Wood Inventory Section in Weyerhaeuser's official MoF Scale Report and in the TFL 39 Annual Report. Often this information has been aggregated by management unit in Weyerhaeuser's official MoF Scale Report.

Performance:

The average variance for cedar 1993-2000 is outside the forecast estimate. Indicator 1, however, suggests that the percentage of cedar is increasing slightly in the DFA's second growth forests.

Year	DFA Harvested (m ³)			DFA Planted ('000 trees)			% variance (±) between planting & harvest
	Total	Cedar	% Cedar	Total	Cedar	% Cedar	
1993	1,347,407	183,538	13.6	1,453.5	212.8	14.6	7.4
1994	1,236,079	145,774	11.8	2,341.2	253.0	10.8	-8.5
1995	1,409,766	187,189	13.3	1,568.2	108.5	6.9	-48.1
1996	1,177,515	143,340	12.2	1,650.5	86.5	5.2	-57.4
1997	1,051,199	130,104	12.4	1,351.0	106.4	7.9	-36.3
1998	964,851	100,711	10.4	1,444.4	162.1	11.2	7.7
1999	1,428,932	189,113	13.2	1,208.3	160.2	13.3	0.1
2000	1,518,840	213,705	14.7	1,567.9	170.5	10.9	-25.9
Avg.	1,126,065.44	143,719.33	11.29	1,398.33	140	8.98	-20.5

Indicator 22: Stand level retention in openings as a percent of total opening area (annual average for non-clearcut openings)

Stand level retention provides for diversity by increasing the range of habitat and stand structure retained. Retention also contributes to genetic diversity by increasing the range of parental genes.

History: This indicator was developed in 2000.

Objective: $\geq 10\%$.

Acceptable Variance: Greater than 10%.

Forecast: The objective describes the required minimum level of group retention in the Timber Zone only. The Forest Project forecast the following levels of retention for each of the three stewardship zones:

- Old Growth Zone 20% minimum
- Habitat Zone 15% minimum
- Timber Zone 10% minimum (group)
5% minimum (dispersed)

Data:

Openings are defined as non-clearcut if they meet or exceed the minimum standards for variable retention. Variable retention is achieved when more than half the total area of the opening is 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 opening.

Stand level retention may include patches of trees (determined by estimating the area of the patches) and individual trees (area contribution is estimated by comparing the basal area of the trees to the average basal area of the initial stand).

Inventory: Stand level retention objectives are written into the Silviculture Prescription by the Area Forester during opening planning. The actual level of retention is then verified during the Post-Harvest Assessment by the Area Forester and entered into the SFM Indicator Tracking Database.

Reporting: The Division Forester compiles the data from the SFM Tracking database and reports on the indicator performance in the annual SFM Report.

Performance:

Year	Total non-clearcut harvest area (ha)	Stand level retention	
		Hectares	% of total
2000	951.7	233.7	24.6

NB: The total non-clearcut harvest area differs in Indicators 22, 23 and 24 due to calculations of basal area equivalence for two single stem blocks and one dispersed retention block.

Indicator 23: Percent of total opening area harvested with non-clearcut systems

This indicator measures the proportion of opening area harvested annually that is not clearcut. Non-clearcut silviculture systems provide for diversity by increasing the range of habitat and stand structure that is retained.

History:	This indicator was developed in 2000.
Objective:	50% of opening area harvested.
Acceptable Variance:	Greater than 50%.
Forecast:	The forecast in an objective of the Forestry Project. In the year 2003, 100% of the openings harvested will be done with a non-clearcut silviculture system.

Data:

Openings are defined as non clear-cut if they meet or exceed the minimum standards for variable retention. Variable retention is achieved when more than half the total area of the opening is 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 opening.

The total opening area includes areas (patches and individual trees) of retention that are within the opening.

Inventory: The silviculture system to be used is written into the Silviculture Prescription by the Area Forester during opening planning. The silviculture system of each opening is tracked in the Silviculture Database. Compliance with the SP is verified during the Post-Harvest Assessment by the Area Forester.

Reporting: The Division Forester compiles the data from the Silviculture Database and reports on the indicator performance in the annual SFM Report.

Performance:

Year	Total harvest area (ha)	Non-clearcut harvest area		Objective (%)
		(ha)	% of total	
2000	1953.7	977.9	50.1	50
1999	1 781	528	30	30

NB: The total non-clearcut harvest area differs in Indicators 22, 23 and 24 due to calculations of basal area equivalence for two single stem blocks and one dispersed retention block.

Indicator 24: Percent of annual harvest area within forest influence

Areas within forest influence experience different growing conditions, including reduced light and wind and hence provide different microclimate and habitat types.

History:	This indicator was developed in 2000.
Objective:	50%, non-clearcut blocks, annual average.
Acceptable Variance:	Greater than 50%.
Forecast:	The forecast is an objective of the Forestry Project. When the target of 100% variable retention is achieved in late 2003, more than half of the then current harvest area will then be within forest influence.

Data:

Forest influence is defined as the area within an opening that is within one tree length of a patch of retention or within one tree length of a single tree retained within the opening. By definition, at least half of the area harvested in non-clearcut openings must be within forest influence

The current approach is to estimate the area of forest influence by ocular examination of opening maps. Future estimates may be determined by applying buffers of appropriate width in the GIS.

Inventory: Forest influence objectives are written into the Silviculture Prescription by the Area Forester during opening planning. The actual level of forest influence is then verified during the Post-Harvest Assessment by the Area Forester and entered into the SFM Indicator Tracking Database.

Reporting: The Division Forester compiles the data from the SFM Tracking database and reports on the indicator performance in the annual SFM Report.

Performance:

Year	Total non-clearcut harvest area (ha)	Forest influence (%)	Objective (%)
2000	951.7	72.5	> 50

NB: The total non-clearcut harvest area differs in Indicators 22, 23 and 24 due to calculations of basal area equivalent for two single stem blocks and a dispersed retention block.

Indicator 25: Percent of identified High Conservation Value (HCV) areas under special management

This indicator identifies areas of special value and describes the management for protecting these values

History: This indicator was developed in 2000.

Objective: 100%

Acceptable Variance: None.

Forecast: The forecast is the objective.

Data:

HCV areas include areas in which conservation of any of numerous social or ecological values is deemed to have an especially high priority. Identification of HCV areas may result from information supplied by First Nations, government agencies, company personnel or other stakeholders.

Inventory: A list of HCV areas is maintained by the Division Forester. Any special management practices required for these areas will be noted or referenced. During the FDP review process this list will be reviewed to ensure forest management activities will not infringe upon or impact the value to be conserved.

Reporting: The Division Forester will annually review the compliance with each special management plan and report on the indicator performance in the annual SFM Report.

HCV areas include:

- The basaltic pillar reserve in the Tsitika Watershed.
- The recreation fishing corridor in the Tsitika Watershed.
- Special Management Zone 07 – Johnstone Strait.
- Special Management Zone 08 – Tsitika River.
- Special Management Zone 11 – Schoen – Strathcona.

Performance:

Year	HCV areas		
	Number of HCV areas	Number under special management	Percent under special management
2000	5	5	100

Indicator 26: Old growth (>250 years) representation by BEC variant

This indicator measures the amount of old growth forest in the DFA by broad ecological classification. Some species are specifically adapted to habitats found in old growth forest.

History: This indicator was developed in 2000.

Objective: Meet Ministry of Forests biodiversity guidebook targets as defined by BEC variant and landscape unit.

Acceptable Variance: An interim old growth deficit exists in some landscape units, as illustrated in the 1998 forest inventory

Forecast: The forecast is an objective set by the FPC Biodiversity Guidebook.

Data:

Old growth or old seral is defined by the MoF in the Biodiversity Guidebook as forests 250 years of age and older. Forest ages are determined from the forest inventory. For productive second-growth forest areas, age is determined by considering the difference between the current (or reference) year and the establishment year. For mature stands (established prior to 1864), age is determined by considering the current year, the year of cruise and the age class assigned at the time of cruise.

The map of BEC (Biogeoclimatic Ecosystem Classification) variants is obtained from the MoF and combined with the current forest inventory to generate the summary of old growth by variant within the DFA.

The FPC Biodiversity Guidebook defines the natural disturbance type and sets targets for retention of old seral stage forest by biogeoclimatic unit. Landscape units and biodiversity emphasis is set by Ministry of Forests Campbell River District through land use planning processes.

Inventory: The baseline data is compiled from the 1998 forest inventory. This report will be re-compiled when on an annual basis following the update of the forest inventory.

Reporting: The Division Forester compiles the data from the GIS database and reports on the indicator performance in the annual SFM Report.

Performance:

As a result of past harvest history, BEC variants in three landscape units are short of the old growth targets.

Landscape Unit	BEC	Old Growth Target (%)	Available OG 1998 (%)	Available OG 2000 (%)
Adam-Eve	AT p	85	89.3	89.3
Adam-Eve	CWH vm 1	13	31.2	30.7
Adam-Eve	CWH vm 2	13	72.2	71.0
Adam-Eve	CWH xm 2	9	49.3	49.3
Adam-Eve	MH mm 1	19	92.4	91.9
Salmon	AT p	85	100	100
Salmon	CWH mm 1	9	34.5	34.0
Salmon	CWH mm 2	9	56.7	55.8
Salmon	CWH vm 1	13	51.0	49.9
Salmon	CWH vm 2	13	71.2	71.2
Salmon	CWH xm 2	9	6.8	6.7
Salmon	MH mm 1	19	92.6	90.2
Sayward	AT p	85	0	0
Sayward	CWH mm 1	9	33.5	33.5
Sayward	CWH mm 2	9	75.4	75.4
Sayward	CWH xm 2	9	7.8	7.8
Sayward	MH mm 1	19	100	100
Tsitika	AT p	85	98.7	98.7
Tsitika	CWH vm 1	19	69.1	68
Tsitika	CWH vm 2	19	87.0	85.9
Tsitika	MH mm 1	28	96.1	96.0
White	AT p	85	100	100
White	CWH mm 1	13	38.9	38.5
White	CWH mm 2	13	73.8	73.7
White	CWH vm 1	19	44.3	43.9
White	CWH vm 2	19	78.6	77.9
White	CWH xm 2	13	15.2	15.2
White	MH mm 1	28	95.5	95.1

Indicator 27: Total number of trees at 'free to grow' compared to planted total

This indicator provides a broad measure of the genetic diversity of the regenerating forest by estimating contributions from both planted seedlings and natural regeneration.

History:	This indicator was developed in 2000.
Objective:	Number of crop and competing trees is greater than number of trees planted (annual average)
Acceptable Variance:	None
Forecast:	The number of crop and competing trees is modeled based on growth and yield data. This information is a key part of the Timber Supply Analysis.

Data:

A free growing stand is defined in the Forest Practices Code of BC Act as "a stand of healthy trees of commercially valuable species, the growth of which is not impeded by competition from plants, shrubs or other trees." A crop tree is defined as a species ecologically suited to the site, free from damage or disease, at least the minimum required spacing from another crop tree and judged capable of surviving to free to grow. A competing tree is defined as a coniferous or deciduous tree that will continue to compete with crop trees until at least free growing.

The free-growing assessment (to determine whether free-growing status has been achieved) includes a tally of total trees per hectare. This total includes both planted and naturally regenerated trees and is compared to the number of trees planted per hectare (obtained from stand records). Total number of trees are determined by multiplying trees per ha by ha for each opening that has achieved free to grow and summing across these areas.

Inventory: The Silviculture Forester carries out free growing surveys as per the SOP. Data collected during the assessment is entered into the silviculture database

Reporting: The Division Forester compiles the data from the Silviculture Database and reports on the indicator performance in the annual SFM Report.

Performance:

Year	Openings surveyed	Stems per hectare		Percent Difference
		Planted	At free growing	
2000	13	306	15,697	+ 5,130%

Indicator 28: Number of reportable oil spills

This indicator provides a measure of pollution from oil spills.

History: This indicator was developed in 2000.
 Objective: 7 or less
 Acceptable Variance: +1 (i.e., 8)
 Forecast: This indicator can't be forecast.

Data:

The operation is legally required to immediately report to the Provincial Emergency Program (PEP) any hydrocarbon spill into water or in excess of 100 liters. North Island Timberlands Spill Contingency Plan requires that all spills are reported to Division Spill Coordinator, who in turn reports the spill to PEP.

Inventory: The Engineering Administrative Technician maintains a record of all spills in the file system.

Reporting: The Division Forester compiles the data and reports on the indicator performance in the annual SFM Report.

Performance:

Reportable spills include fuel or lubricant spills that are over 100 litres or that enter a water body.

Year	Number of Reportable Spills		
	Objective	Actual	Volume (litres)
2000	7	6	1,181.5*
1999	N/A	6	940
1998	N/A	9	
1997	N/A	8	
1996	N/A	10	
1995	N/A	8	

* NB – 600 litres attributable to one contract operation spill.

Indicator 29: Natural wildfires by number and area.

This indicator provides a measure of success at protecting the forest from damage by fire. Natural wildfires are those that are initiated by lightning strikes. Refer to Indicator 9 for a similar measure on fires initiated by management activities.

History: This indicator was developed in 2000.
 Objective: Less than 50 hectares.
 Acceptable Variance: Fires exceeding 50 hectares are actively managed.
 Forecast: This indicator can't be forecast.

Data:

The Division Forester reports annually on the incidence and cause of fires and on the area burned. This includes fires resulting from lightning strikes and other causes not related to forest management activities.

A historical record is available for TFL 39 areas. For MF 19 areas, tracking and reporting commenced in 1997.

Inventory: The Production Superintendent reports fires to the Division Forester for entry into the Silviculture Database.

Reporting: The Division Forester compiles the data from the Silviculture Database and reports on the indicator performance in the annual SFM Report.

Performance:

Year	Number	Total area burned (ha)
2000	2	0.02
1999	0	
1998	0	
1997	0	
1996	0	
1995	1	Spot
1994	6	1
1993	0	
1992	1	Spot
1991	0	
1990	7	2
1989	2	Spot
1988	0	
1987	0	
1986	0	
1985	2	Spot
1984	1	Spot
1983	0	

Indicator 30: Number of areas greater than 500 hectares at high risk of mortality due to insects or disease

This indicator measures the success of management strategies to limit the size (impact) of insect infestations and disease epidemics.

History: This indicator was developed in 2000.

Objective: Zero

Acceptable Variance: Operation has previously identified high risk areas and implemented a strategy to manage risk prior to area exceeding 500 hectares.

Forecast: This indicator can't be forecast.

Data:

Forests are assessed continuously, both on the ground and from the air, to identify potential insect infestations or disease epidemics. Suspect areas are further examined by helicopter or ground survey. Federal, provincial or independent experts are consulted on the need for preventative measures. Salvage occurs if there is significant mortality.

Inventory: Annually the Division Forester will carryout a Forest Health Overview assessment and report on forest health concerns. The Division Forester will implement a strategy to manage the risk prior to the area exceeding 500 hectares. The report is filed in the Forestry File system.

Reporting: The Division Forester compiles the data and reports on the indicator performance in the annual SFM Report.

Performance:

Year	Forest threatened by insects or disease		Insects and disease observed in DFA during Forest Health Overview Assessment
	Number of areas greater than 500 hectares	Total area	
2000	0	0	Balsam wooly adelgid Sawfly

Indicator 31: Area of naturally induced slides

This indicator provides a baseline measure of disturbance from naturally-induced slides.

History: This indicator was developed in 2000.

Objective: Track area of natural slides.

Acceptable Variance: Not applicable.

Forecast: This indicator can't be forecast.

Data:

Naturally-induced slides are slides that are not initiated by roads or other harvest activities and occur in areas of forest that are greater than 15 years of age. The documentation of any new slides is based on the frequent air and ground travel that occurs throughout the forest.

Inventory: Slides are reported to the Division Forester. Slides larger than 2 hectares are entered into the forest cover GIS.

Reporting: The Division Forester compiles the data from the file system and reports on the indicator performance in the annual SFM Report.

Performance:

The current known area of historic, naturally induced and non-reforested slides larger than two hectares.

Year	Natural slides (ha)	Comment
2000	194	This is the baseline number.

Indicator 32: Percent of openings in which soil disturbance exceeds plan

This indicator measures the amount of soil disturbance that exceeds planned levels. Higher disturbance levels both reduce the productive area and increase the risk of environmental impact, particularly sedimentation of streams.

History: This indicator was developed in 2000.

Objective: Zero.

Acceptable Variance: None.

Forecast: The forecast is the objective.

Data:

Maximum allowable soil disturbance levels (soil disturbed within the net area to be reforested) are specified in the silvicultural prescription for each opening. During the post harvest assessment a determination is made as to whether soil disturbance exceeds the level specified on the plan. This indicator reports the proportion of openings in which the actual soil disturbance exceeds that specified in the silvicultural prescription.

Inventory: Soil disturbance limits are written into the Silviculture Prescription by the Area Forester during opening planning. The actual level of soil disturbance is then verified during the Post-Harvest Assessment by the Area Forester and entered into the Silviculture Database.

Reporting: The Division Forester compiles the data from the Silviculture Database and reports on the indicator performance in the annual SFM Report.

Performance:

Year	Blocks reported on			
	Total		Blocks with soil disturbance exceeding plan	
	Blocks	Hectares	Number	Percent
2000	72	1998.4	0	0

Indicator 33: Water quality measurements for selected watersheds

Sediment and water temperature can impact fish and domestic water supply.

History: This indicator was developed in 2000.

Objective: Turbidity less than 5 Nephelometric Turbidity Units (NTU); temperature less than 15° C

Acceptable Variance: Plus 10%

Forecast: This indicator can't be forecast

Data:

The Oyster River is designated as a water supply area. It is a source of domestic water and has a fish hatchery. Forest management can directly impact stream temperature and input sediment. Turbidity and temperature will be measured in the upper watershed, where the Oyster River leaves the DFA and near where it enters Georgia Strait. Samples will be collected during the spring flush in May, during low flow in late September and during high flow in late November.

Inventory: The Division Forester will have the samples collected and analyzed as per schedule. The data will be entered into the SFM Indicator Tracking Database.

Reporting: The Division Forester compiles the data and reports on the indicator performance in the annual SFM Report.

Performance:

Turbidity (NTU)	Flush				Low				High			
	98	99	00	01	98	99	00	01	98	99	00	01
Upper	N/A	N/A	N/A		N/A	N/A	0.20		N/A	N/A	N/A	
Mid	0.52	0.95	0.67		1.59	0.16	0.30		0.87	0.80	0.56	
Lower	0.70	1.35	0.74		2.2	0.34	0.39		1.68	1.22	1.15	

Temperature (°C)	Flush				Low				High			
	98	99	00	01	98	99	00	01	98	99	00	01
Upper	N/A	N/A	N/A		N/A	N/A	8.0		N/A	N/A	N/A	
Mid	12.5	4.5	7.0		9.0	9.5	9.0		3.5	3.0	1.0	
Lower	18.0	6.5	10.0		10.0	11.0	12.0		4.0	3.5	1.0	

Indicator 34: Area and percent of total slides from harvested areas or roads

This indicator provides a measure of soil disturbance by slides caused by harvest activity. Such soil disturbance may reduce the productive area and increases the risk of environmental impact, particularly sedimentation of streams.

History: This indicator was developed in 2000.

Objective: Zero as result of post-1995 activities.

Acceptable Variance: None

Forecast: The forecast is the objective.

Data:

New slides are documented through the frequent forest assessments that occur both on the ground and from the air. Slides are classified as to whether they originated from harvest activity in areas harvested since the inception of the forest practices code.

Inventory: Slides are reported to the Division Forester. Slides larger than two hectares are entered into the forest cover GIS.

Reporting: The Division Forester compiles the data from the file system and reports on the indicator performance in the annual SFM Report.

Performance:

Year	Total slides (ha)	Historic natural slides (ha) (from Ind. 31)	2000 slides from harvested areas or roads		
			Number	Hectare	% by area
2000	194.8	194.0	3	0.8	0.4

Indicator 35: Distribution of revenues by percentage

The distribution of North Island revenues provides a measure of the operation's overall contribution to local, regional, provincial and national economies, and of the operation's financial viability.

History: This indicator was developed in 2000.

1999 Objective: Track distribution.

Acceptable Variance: Not applicable.

Forecast: This indicator can't be forecast.

Data:

The Cost Accountant began tracking the distribution of North Island revenues by wages (within company and contracted), government stumpage and fees, purchases (local and non-local) and corporate profit in 1999. This core information is collected and reported on during each financial month end and reported on in the North Island financial statement.

Inventory: The Cost Accountant collects and tracks financial information including wages (within company and contracted), government stumpage and fees, purchases (local and non-local) and corporate profit.

Reporting: This core information is reported on during each financial month end and reported on in the North Island financial statement. The information as presented here is expressed as a percentage of North Island total log sales revenues in order to address the question of equity with respect to economic benefits. Other expressions of the data are presented to NIWAG to establish absolute levels of benefits and to facilitate discussion regarding the impacts of such variables as annual harvest levels.

Guidelines for Compiling Indicator 35:

Contract Services covers payments to full phase (stump to dump) logging contractors, single phase contractors, general service contractors such as janitorial, electrical, and carpenters, etc. as well as consultants and professional services. These costs include the supply of equipment and materials costs required to execute the contract work and invoiced as one "job."

Own crew labour includes the gross payment of wages paid to both salary and hourly employees without deduction for statutory or contractual deductions. It includes all benefits costs paid by the employer for statutory and contractual benefits including Workers Compensation Assessments. Profit share and bonus payments are included. Payments made to cover employees under the Employee and Family Assistance Program (EFAP) and costs related to EFAP programs are not included. Includes only those people listed on the unit payroll systems and not contract personnel hired to perform work at the unit that would or would not regularly be performed by an employee.

Payments to Government includes only direct payments for stumpage and royalty fees, logging waste residue payments, fee in lieu charges for log exports, timber taxes and fees allocated by Head Office properties department (municipal and regional district property taxes, foreshore leases, etc), and amounts charged to licenses (e.g., subcode 920 radio licenses, highway crossing permits, etc.). No attempt has been made to estimate payments made for Goods and Services Taxes, provincial sales taxes, provincial motor fuel taxes, federal excise taxes, payroll related taxes (employee income tax with holdings) and assessments for EI or CPP, corporate income taxes, or corporate capital taxes, etc.

Purchasing includes all supplies, materials and services purchased that don't fit into a category listed above. Some of the services in this category would include Insurance coverage, road use charges, association dues, donations and repair supplies and services.

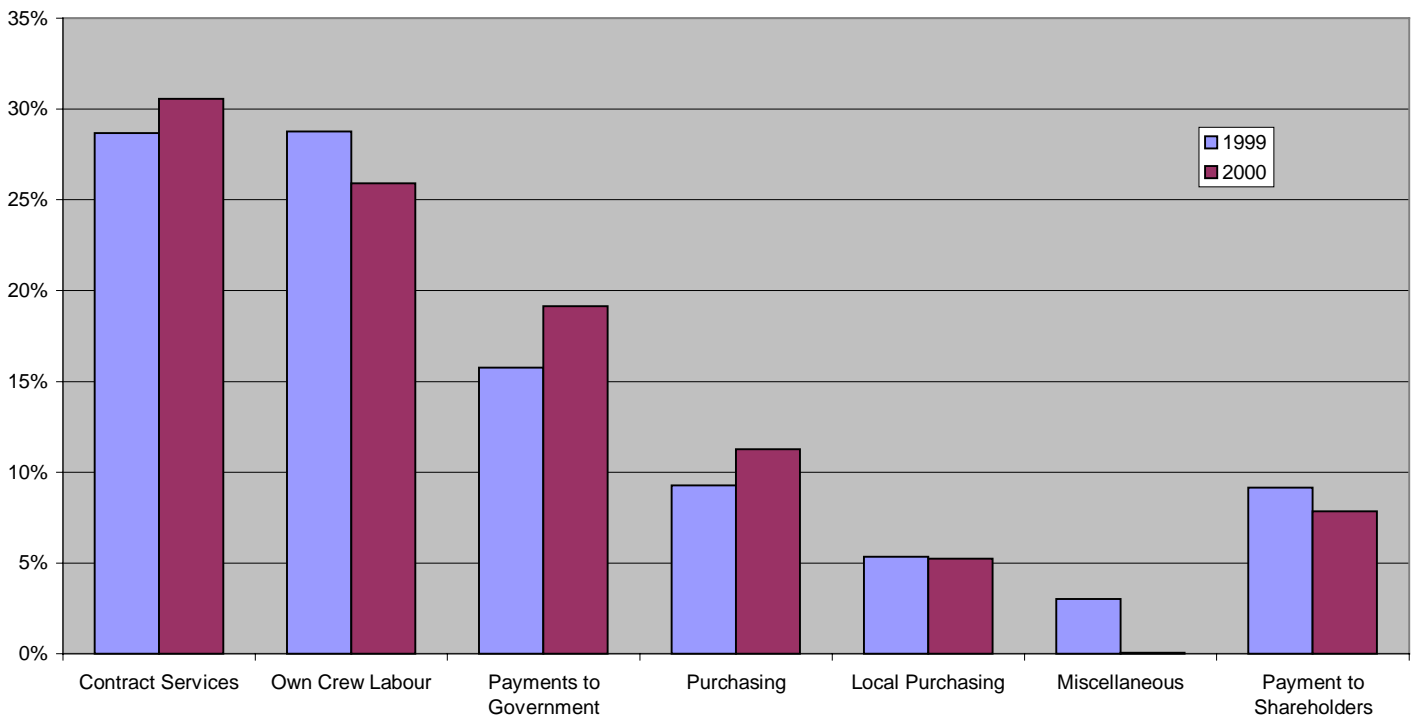
Local purchasing is derived by subtracting from total purchasing those amounts paid by local cheque and Central Accounts Payable to vendors north of Royston on Vancouver Island and the Northern Gulf Islands.

Miscellaneous is a forced number representing the difference between total log sales and those costs identified above and total unit profit. It includes, but is not limited to nor reconciles to the following: depletion on private timber, road amortization, silviculture liability change, inventory change/allocations, depreciation, and machine cost allocations.

Payments to Shareholders (profit) is the total unit profit including non-operating profit (includes gains on sale of land, timber and equipment).

Performance:

Distribution of Revenues %



Indicator 36: Compliance with required public consultation processes

This indicator documents compliance with required public consultation processes. These public reviews are important for communication, including input into operational and strategic plans.

History: This indicator was developed in 2000.
 Objective: 100%
 Acceptable Variance: None
 Forecast: The forecast is the objective.

Data:

The Division Forester tracks required public consultation processes, documenting requirements and achievements. The results are summarized and reported annually. The required public consultation processes include public review of Management Plans, Forest Development Plans, Pesticide Use Permits, First Nations Consultations and other reviews as required.

Inventory: A record of public participation is maintained with each process. A summary of public consultation is maintained in the SFM Indicator Tracking Database.

Reporting: The Division Forester compiles the data from the SFM Indicator Tracking Database and reports on the indicator performance in the annual SFM Report.

Performance:

Public Consultation Process	Date of Review
Management Plan (MP)	Nov 21 – 22, 2000
Forest Development Plan (FDP)	Oct 4 – Dec 6, 1999
Pesticide Use Permit	N/A
First Nations – FDP	Nov 3, 1999
First Nations – MP	Oct 30, 2000

Indicator 37: Days haul wood

This indicator measures the extent of the work year for employees. A day in which wood is hauled usually indicates that all harvest phases are working. The attainment of maximum capacity may be effected by weather, market conditions or other constraints.

History: This indicator was developed in 2000.

Objective: 233 days for 2000.

Acceptable Variance: Includes shutdown due to issues outside the control of the operation (including strike, lockout, weather, markets, etc.).

Forecast: The forecast is the objective.

Data:

Inventory: The number of days when wood is watered is reported on during each financial month end and reported on in the Unit financial statement by the Cost Accountant.

Reporting: The Division Forester compiles the data from the financial statement and reports on the indicator performance in the annual SFM Report.

Performance:

Year	Days Haul Wood		Comment
	Objective	Actual	
2000	233	230	8 days lost to labour dispute
1999	N/A	229	
1998	N/A	203	
1997	N/A	172	
1996	N/A	166	
1995	N/A	178	

Indicator 38: Maintenance of a certified SFM system

This indicator describes whether management in the DFA continues to meet the standards of defined forest certification systems.

History: This indicator was developed in 2000.

Objective: Maintain SFM certification.

Acceptable Variance: None.

Forecast: The forecast is the objective.

Data:

North Island Timberlands is audited to ISO 14001 and CSA Z809 standards annually. An external accredited auditor conducts the audit, and the results determine the status of the CSA certification. The results of the audits are reported to the Community Advisory Group and are entered into the DFA data set.

Inventory: The Division Forester ensures that a copy of audit reports is filed in the centralized file at North Island.

Reporting: The Division Forester reports on the indicator performance in the annual SFM Report.

Performance:

Audit	Date	Result
Surveillance audit for ISO 14001 and CSA Z809	August 2, 2000	Retained certification status
Application for Chain of Custody certification	January 11, 2000	Chain of custody certification approved
Surveillance audit for ISO 14001 and CSA Z809	October 18, 1999	Retained certification status.
Application for ISO 14001 and CSA Z809 certification	April 6, 1999	Forest certification approved.

Indicator 39: Compliance with treaty settlements and interim measures agreements

This indicator measures compliance with treaty rights and legal requirements regarding First Nations communities.

History: This indicator was developed in 2000.

Objective: 100% compliance.

Acceptable Variance: None

Forecast: The forecast is the objective.

Data:

North Island Timberlands will implement measures to comply with treaty settlements or interim measures agreements that are imposed on the DFA.

Inventory: The Division Forester will ensure that treaty rights and legal requirements are incorporated into the Environmental Management System (EMS). A summary of First Nations interactions is maintained in the SFM Indicator Tracking Database.

Reporting: The Division Forester reports on the indicator performance in the annual SFM Report.

Performance:

Year	Compliance	Comment
2000	N/A	There are no settlements or interim measures agreements in place. North Island Timberlands continues to monitor treaty negotiations and work with First Nations through the Kwakwilt Laich-Kwil-Tach Nations Treaty Society

Indicator 40: First Nations information sharing and referrals program

This indicator documents opportunities for First Nations to review Forest Development Plans. These reviews are important for communication, including input into operational plans.

History: This indicator was developed in 2000.

Objective: Annually review forest development plan with First Nations.

Acceptable Variance: None

Forecast: The forecast is the objective.

Data:

Inventory: The Division Forester documents Forest Development Plan reviews that occur with First Nations. A summary of First Nations information sharing and reviews is maintained in the SFM Indicator Tracking Database.

Reporting: The Division Forester reports on the indicator performance in the annual SFM Report.

Performance:

Year	Review	
	Date	Comment
2000	November 3, 1999	Reviewed by Kwakuitl Laich-Kwil-Tach Nations Treaty Society

Indicator 41: First Nations partnership agreement

This indicator provides a measure of participation by local First Nations in the SFM.

History: This indicator was developed in 2000.
 Objective: A signed partnership agreement is in place.
 Acceptable Variance: None
 Forecast: The forecast is the objective.

Data:

The goal of the partnership agreement is to assist First Nation in creating economically self sufficient forest enterprises. This is done through training and support of a silviculture crew, support of students enrolled in technical or professional forestry programs, supporting feasible joint ventures, donations and communication.

Inventory: The Division Forester will track participation, donations and partnership activities in the SFM Indicator Tracking Database.

Reporting: The Division Forester reports on the indicator performance in the annual SFM Report.

Performance:

Partnership Activities	Year		
	1998	1999	2000
Partnership Agreement signed	Yes	Yes	Yes
<u>Partnership Crew</u>			
RIR	N/A	39.7	0
Man days	305	1008	1354.1
<u>Mentorship Program</u>			
Sponsored students	0	2	2
Summer students	0	3	4
<u>Participation</u>			
Review meetings	N/A	N/A	17
Joint venture projects supported	0	1	1
Donations program	yes	yes	yes
NIWAG participation	yes	yes	yes
Other support (programs)	N/A	N/A	4

Indicator 42: Public education, communications and consultation program

This indicator measures success at meeting commitments for public education, communications and consultation.

History: This indicator was developed in 2000.

Objective: 100% compliance to Plan.

Acceptable Variance: None.

Forecast: The forecast is the objective.

Data:

During the annual planning process that begins in October a public education program is developed and a budget put in place. The program may consist of tours, open houses, displays, appearances, sponsorships or communication. The objective is to complete all the activities listed in the program.

Inventory: It is the responsibility of the Division Forester and Human Resources Manager to develop the program and report on the completion of activities in the SFM Indicator Tracking Database.

Reporting: The Division Forester reports on the indicator performance in the annual SFM Report.

Performance:

		2000		2001
		Plan	Achieved	Plan
Tours	Programs	1	2	2
	Stakeholder	1	5	1
	Other	As requested	20	As requested
Public Education	Open houses	2	5	0
	School visits	0	0	4 classes
	Presentations	N/A	4	1
Communication	Talks	As requested	0	As requested
	Stakeholder	10	26	17
Support	Programs	0	4	0
	Organizations	0	1	0
	Students	14	14	7

Indicator 43: Corporate and Operational Research Program

This indicator provides a measure of how responsive research programs are to contributing to better quality decisions for Sustainable Forest Management.

History:	This indicator was developed in 2000.
Objective:	Research programs linked to strategic ecosystem management and operational issues.
Acceptable Variance:	Not applicable
Forecast:	The forecast is the objective.

Data:

Research programs are summarized in individual reports and the "Reporting to Revenue Canada" document.

Inventory: Nanaimo Woodlands maintains the up to date documentation of Weyerhaeuser BC. Coastal Group research activities. This documentation includes project plans, budgets, research activity progress, and actual dollars spent.

Nanaimo Woodlands also facilitates the transfer of "Best Practices" from Weyerhaeuser Corporate Research to the BC Coastal Group.

Reporting: The Manager of Nanaimo Woodlands is responsible for the overall program and reporting annually on this indicator.

Performance:

Year	Comment
2000	Current research programs are summarized in the "Reporting to Canada Customs and Revenue Agency," and in the "Forest Project Annual Report."
1999	Current research programs are summarized in the "1999 Reporting to Revenue Canada", the "Forest Project Annual Report 1999 – 2000", Forest Renewal B.C. Summaries and the actual application of "Best Practices" on the ground.