SILVA FOREST FOUNDATION CERTIFICATION PROGRAM
P.O. Box 9, Slocan Park, British Columbia, Canada V0G 2E0
Phone 250-226-7222 Fax 250-226-7446
Canadian Charitable Registration No. 0902676-52

SILVA FOREST FOUNDATION

STANDARDS CHECKLIST FOR ECOLOGICALLY RESPONSIBLE TIMBER MANAGEMENT

June 2000 Proof

TABLE OF CONTENTS

SILVA FOREST FOUNDATION
STANDARDS CHECKLIST FOR ECOLOGICALLY RESPONSIBLE TIMBER MANAGEMENT
June 2000 Proof

SFF Values and Vision

SFF standards represent a vision of forest use and timber management arising out of values that are fundamentally different from those that guide conventional timber management. Ecologically responsible forest use is ecosystem-based.

High levels of social and economic health are maintained by protecting ecosystems, the natural capital, which is the foundation for societies and economies. SFF believes that the primary concern of forest use must be the protection, maintenance, and, where necessary, restoration of fully functioning forests for the welfare of all beings and the whole forest. Ecosystem character (how a natural forest functions) and condition (how human use has impacted forest functioning) form the context within which social and economic criteria are designed and adjusted.

SFF does not value human life less than that of other species, but we do recognize that human social and economic welfare in forest ecosystems, like the welfare of all forest organisms, *depends* on the welfare of the forest ecosystem as a whole. Self-regulating, fully functioning forests provide, for example, the clean water and air, building materials, food, clothing, and spiritual grounding that are essential to human mental, physical, and spiritual health. Other human or natural resources available on Earth cannot build systems that adequately replace these forest services and other natural forest functions with human-designed production. The human animal, like other species, has adapted to the earth's design, and our survival depends on the continued integrity of that design.

Within the context of the protection, maintenance, and restoration of fully functioning forests, the unique issues of human communities and their economic activities must, of course, be addressed. Unstable communities produce human suffering and ecosystem degradation. Therefore, the standards in this document include social and economic standards.

Ecologically Responsible Forest Use vs. Ecologically Responsible Timber Management

The present standards focus on one type of forest use, timber management. However, a clear picture of ecologically responsible timber management cannot be given without situating it in the greater context of *all* ecologically responsible human uses of the forest, including tourism, non-timber forest products, ranching, hunting, and fishing, as well as timber management. Therefore, some of the standards in this document describe appropriate relationships between timber management and other forest uses.

Specific standards for non-timber uses have not yet been developed by SFF.

In some forest ecosystems, timber management of any kind will be incompatible with the values that guide ecologically responsible forest use. Therefore, timber management must never be assumed to be the obvious, the best, or the inevitable use for a forest ecosystem.

Through our certification program, SFF hopes to assist in the development and promotion of models of ecologically responsible forest use, particularly ecologically responsible timber management. By demonstrating the practicality and desirability of this approach to forest use, we hope to encourage its expansion in Canada, North America, and other parts of the world.

On the Definition of "Natural"

The term and concept "natural" is used frequently throughout this document. Natural forest composition, structures, and functioning are benchmarks for SFF evaluation of ecologically responsible timber management.

In this document, "natural" is defined as the composition, structures, and functioning of ecosystems before industrial modification of landscapes and their component ecosystems. For North America, SFF generally defines "natural" conditions as the period before European contact and similar modern conditions. Since First Nations used the forest and other ecosystems of North America for millennia before European contact, "natural" does NOT mean without any human use.

Levels of Evaluation

Applicants for SFF certification may be evaluated at two levels of timber management planning and implementation. Different standards apply to each of these two levels. However, SFF certification of ecologically responsible timber management always represents full endorsement and verification by the Silva Forest Foundation that timber is managed according to *SFF Standards*.

WHOLE FOREST EVALUATION is applied where the applicant has decision-making control over the landscape or part of the landscape (at least 1000 hectares) and has decision-making control over the forest stands that make up the landscape in question. Whole forest applicants are not scored against standards designated as "SMALL HOLDER only."

Whole forest evaluation may be applied either to the entire holdings of an ownership or to an entire landscape or watershed that constitutes only a portion of an ownership's contiguous holdings. If the certifier determines that lands of 1000 hectares or more do not include a landscape unit sufficiently discrete, diverse, contiguous, or otherwise suitable for application of landscape-level standards, management may be evaluated at the small holder level (see below).

SMALL HOLDER EVALUATION is applied to lands that do not meet the provisions for WHOLE FOREST evaluation as described above. SMALL HOLDER applicants will not be evaluated for any standards designated as "WHOLE FOREST only". Landscape-level standards for SMALL HOLDERS consist only of a general analysis and accommodation of landscape character and condition, as well as evidence that the applicant is actively involved in promoting

landscape-level planning and management in the local community. These standards, and any other standards that apply only to SMALL HOLDERS, are marked "SMALL HOLDER only".

SFF may decide to grant SMALL HOLDER evaluation to a large-area timber management enterprise *on the condition* that a clear plan is in place to develop and to implement ecologically responsible landscape-level timber management that will in future be evaluated as a WHOLE FOREST. Maintenance of certification would then depend upon faithful implementation of the landscape-level plan.

In Canada, the leaders in ecologically responsible timber management are currently First Nations and small landholders. Because both of these groups usually manage relatively small forest areas, SFF has established SMALL HOLDER evaluation to acknowledge and endorse their work. However, SFF believes that WHOLE FOREST evaluation standards describe the type of timber management that can reasonably be expected to be sustainable in the long term. Ecologically responsible timber management at the stand level cannot prevent forest stand degradation if irresponsible practices are occurring elsewhere in the same forest landscape.

The Scoring System

Flexibility

The high standards presented in this document constitute goals towards which ecologically responsible timber management shall continually progress. However, initial certification by SFF does *not* require perfect compliance with these standards. The checklist scoring system is designed to provide flexibility within certain initial minimum performance levels.

Modifications

In addition, SFF recognizes that current social, economic, legal, and political contexts of forestry often do not allow total compliance with *SFF Standards*, regardless of an applicant's sincere desire to achieve this. Similarly, some standards also may be inappropriate for certain forest sites.

Therefore, SFF Evaluation Teams are authorized to modify the weighting of standards scored in this document, in order to account for the specific characteristics of ecosystems and operations being evaluated. Only the *weighting* of standards may be modified. Revisions of wording, or addition or deletion of standards, will not occur. All such modifications of weighting will be carried out in accordance with documented SFF evaluation procedures. All such modifications also will be described and justified, with explicit reference to the relevant standards, in the Certification Report.

Scoring

Standards that will be scored are indicated by boxes at the right side of the checklist. Scores or, if a standard is not applicable, "N/A" will be entered in these boxes. Standards without scoring boxes are either a) general headings or criteria whose score is the sum of all lower-level (longer paragraph numbers) standards, or b) indicators that provide specific examples of acceptable performance relative to the standards they come under, or c) recommendations, i.e., advice or guidance that will not be considered in assigning scores. The degree of a timber management enterprise's compliance with indicators will be carefully considered in arriving at a score for the relevant standard. Additional indicators observed in a specific timber management enterprise may also be entered in the checklist to

justify scores assigned by Evaluation Teams. In particular, site-specific factors may render some pre-established indicators inappropriate.

Each applicable standard will be scored on a scale from -3 to +3. A "0" score indicates minimal compliance with the standard as exemplified by indicators.

Positive scores represent a "better than minimum" performance, which may be qualitatively described as: +3 — exceptional
+2 — excellent
+1 — good

Negative scores represent a "below minimum" performance, which may be qualitatively described as: -1 — undesirable
-2 — poor
-3 — complete non-compliance.

In determining scores, it is imperative that Evaluation Teams consider the unique ecological, social, economic, legal, and political contexts of the specific timber management enterprise under evaluation. The scale and means of the timber management enterprise must also be carefully considered before assigning a score. For example, a level of performance that is unacceptable for larger companies may be adequate for smaller operations with limited financial or technical means.

Certification Thresholds

Certification requires a "0" or positive score sum for all standards that have been assigned "fatal flaw" potential (signified by the symbol ":"). All scoring totals for potential fatal flaws include any scored standards at a lower level in the hierarchy (longer paragraph numbers). For example:

- the total for 6.3.4 is the sum of 6.3.4.1 through 6.3.4.5.
- the score for 6.6.1 need not consider any lower-level standards.
- the score for 6.6.2 must consider compliance with lower-level indicators (6.6.2.1 through 6.6.2.2.6) that are not assigned their own scores.
- the total for Principle 4 is the sum of scores for 4.1 through 4.5.3.

Timber management enterprises that have one or more fatal flaws (negative scores on :) must correct the flaws *prior* to certification. This type of requirement is called a "pre-condition".
Where negative scores are assigned for standards that are *not* marked ":", SFF may set "conditions" of certification to address the problem. Conditions are requirements to be fulfilled *after* certification, and are included in the legally binding Certification Agreement.

Fatal flaws that begin with "Inter-criterial evaluation of…" are scored as the average of other scores. If the required average does not calculate to a whole number, the score is rounded to the next whole number further away from zero. For example, in 6.3.16, if the average of all scores listed is –0.3, the score entered in the scoring box for 6.3.16 would be –1.

Scoring Examples

The checklist scoring system is intended to provide for flexibility in complying with *SFF Standards*. Timber management enterprises are permitted to receive a negative score on some standards if performance on other standards can compensate with a positive score. However, potentials for fatal flaws, as discussed above, serve to limit this flexibility somewhat.

For example, an applicant might designate only one out of three codominant species as full-cycle trees (6.3.8.2.1), and so might receive a score of -1 or -2 for 6.3.8.2. But if the same applicant does exceptional work retaining snags and large fallen trees and receives a +2 or +3 for 6.3.8.3, the shortfall *may* be compensated, depending on other scores within Section 6.3.8. Since 6.3.8 is a potential fatal flaw, the total for that section must be "0" or positive.

A second example demonstrates a standard with less flexibility. 6.6.1 is a potential fatal flaw with no lower-level (longer paragraph numbers) standards. This means that a negative score for 6.6.1 cannot be compensated by performance on any other standard. This fatal flaw would have to be corrected *prior* to certification being granted.

STANDARDS CHECKLIST

1. Character and Condition Standards

1.1 Character and Condition of the Landscape and Stand *(: for WHOLE FOREST only)*

WHOLE FOREST applicants will be evaluated against all standards in this section except 1.1.5. SMALL HOLDER applicants will be evaluated against 1.1.4 through 1.1.9.

The level of detail required by SFF for this section will vary according to the scale and means of the timber management enterprise, as well as specific concerns of local stakeholders. Specifics of required character and condition assessment methods are not given here, since SFF emphasizes creative, efficient, practical, and accurate approaches to learning about the landscape and stands that comprise and surround the evaluated lands.

SFF certification does not necessarily require state-of-the-art scientific research projects and reports about every issue raised in this section. Rather, timber management enterprises must provide reasonable rationales, addressing the issues raised below, for timber management activities, and these rationales must be based on verifiable knowledge of the landscape and stands in which they operate. For larger operations, "verifiable knowledge" should include statistically robust data and analyses. For smaller operations, personal, incidental observations of the manager over many years may suffice. Rationales may turn out to be faulty in some respects, but the existence of these rationales nonetheless provides a basis for evaluation and ongoing improvement of timber management activities.

SFF Standards	Score
1.1.1 *(WHOLE FOREST only)* Descriptions and/or maps of the landscape character shall be adequate to guide design of a protected landscape network and forest use zones. Descriptions and/or maps include:	
1.1.1.1 biophysical characteristics.	
1.1.1.2 important ecological characteristics.	
1.1.1.2.1 Emphasis is placed on the diversity and distribution of naturally rare genetic strains, species, or ecosystem types.	
1.1.1.3 disturbance regimes.	
1.1.1.4 ecosystem types.	
1.1.1.5 ecological sensitivity to disturbance, including ecological limits.	
1.1.1.6 the historical role and significance of the landscape in its greater regional context.	
1.1.1.6.1 Examples of historical roles include: a refuge or unique habitat for rare genetic strains, species; a rare ecosystem type; a refuge from certain disturbance agents; a large-scale movement corridor or landscape linkage for wildlife, plants, and other species; and special habitat used by certain species only for short periods and under specific conditions.	

1.1.2 *(WHOLE FOREST only)* Data used to determine the landscape character shall be appropriate to the means of the timber management enterprise. ☐

1.1.2.1 Data sources and analysis/interpretation are cost-effective.

1.1.2.2 Data sources and analysis/interpretation yield accurate and operationally useful information

1.1.3 *(WHOLE FOREST only)* Descriptions and/or maps of the landscape condition shall be adequate to guide decisions about whether restoration is necessary.

1.1.3.1 Descriptions and/or maps of the landscape condition are based on data appropriate to the means of the timber management enterprise. ☐

1.1.3.1.1 Current biophysical and ecological characteristics, disturbance regimes, and ecosystem types are compared to the natural character.

1.1.3.1.2 Data sources and analysis/interpretation are cost-effective.

1.1.3.1.3 Data sources and analysis/interpretation yield accurate and operationally useful information

1.1.3.2 Descriptions and/or maps of the landscape condition include an analysis of the current ecological significance of the landscape in its greater regional and global context. ☐

1.1.3.2.1 Examples of roles that the landscape may play in the ecology of a region include: a refuge for endangered or threatened genetic strains or species; an endangered or threatened ecosystem type; a buffer between reserved landscapes and more highly modified landscapes; a large-scale movement corridor or landscape linkage for wildlife, plants, and/or other species; and a high conservation value forest as defined by FSC.

1.1.3.2.2 Descriptions and/or maps of the landscape condition include identification of endangered or threatened genetic strains, species, or ecosystem types.

1.1.4 : Old growth shall not be cut where: ☐

1.1.4.1 its area in the greater landscape has declined significantly or is in significant decline, and/or

1.1.4.2 where equally viable opportunities exist to cut younger stands.

1.1.5 : *(SMALL HOLDER only)* Descriptions of the landscape character and condition for SMALL HOLDER applicants shall provide a general framework for ecologically responsible stand-level planning and operations. ☐

1.1.5.1 There is a brief description of natural successional processes for the surrounding landscape, including common disturbance regimes.

1.1.5.2 There is a description of plans to mimic and maintain natural successional processes and natural disturbance regimes through timber management activities.

1.1.5.3 Where old growth is planned for timber cutting, standards in 1.1.4 are satisfied.

1.1.5.4 The timber management enterprise demonstrates an interest in and awareness of forest use alternatives that might suit that landscape's character and condition better than current uses.

1.1.5.5 RECOMMENDATION: The timber management enterprise should actively promote, and works with the local community towards, the development of a plan for ecologically responsible use of the landscape within which operations occur.

1.1.6 Descriptions and/or maps of the stand character shall be adequate to guide timber management and design of other forest uses. Descriptions and/or maps include: ☐

1.1.6.1 biophysical characteristics.

1.1.6.2 important ecological characteristics.

1.1.6.2.1 Emphasis is placed on the diversity and distribution of rare genetic strains, species, or ecosystem types.

1.1.6.3 fine-scale disturbance regimes.

1.1.6.4 fine-scale ecosystem types.

1.1.6.5 for WHOLE FOREST applicants, refinements of landscape-level determinations of the ecological sensitivity to disturbance of ecosystems; and for all applicants, fine-scale areas of ecological sensitivity within stands.

1.1.6.6 the historical role and significance of the stand in its landscape context.

1.1.6.6.1 Examples of such historical roles include: a refuge for genetic strains, species that are rare at the landscape level; a rare ecosystem type; a refuge from certain disturbance types (e.g., moist riparian ecosystems that burn much less frequently than drier upland ecosystems); and a movement corridor for wildlife, plants, and other species.

1.1.7 Data used to determine the stand character shall be appropriate to the means of the timber management enterprise. ☐

1.1.7.1 Data sources and analysis/interpretation are cost-effective.

1.1.7.2 Data sources and analysis/interpretation yield accurate and operationally useful information

1.1.8 Descriptions and/or maps of the stand condition shall be adequate to guide decisions about whether restoration is necessary.

1.1.8.1 Descriptions and/or maps of the stand condition are based on data appropriate ☐

to the means of the timber management enterprise.

1.1.8.1.1 Current biophysical and ecological characteristics, fine-scale disturbance regimes, and fine-scale ecosystem types are compared to the natural stand character.

1.1.8.1.2 Data sources and analysis/interpretation are cost-effective.

1.1.8.1.3 Data sources and analysis/interpretation yield operationally useful information.

1.1.8.2 Descriptions and/or maps of the stand condition include analysis of the current ecological significance of the stand in its landscape context.

1.1.8.2.1 Examples of roles that the stand may play in the ecology of a landscape include: a refuge for endangered or threatened genetic strains or species; an endangered or threatened ecosystem type; a buffer between reserved stands or landscapes and more highly modified stands or landscapes; a fine-scale movement corridor or landscape linkage for wildlife, plants, and/or other species; and a high conservation value forest as defined by FSC.

1.1.8.2.2 Descriptions and/or maps of the stand condition include identification of endangered or threatened genetic strains, species, or ecosystem types.

1.1.9 Decisions about whether restoration is necessary are based on the landscape and stand character and condition.

1.1.9.1 Restoration measures are planned and implemented where human activities have resulted in significant degradation of ecosystem functioning.

1.1.9.2 The existence in the landscape and/or stand of rare, threatened, and endangered genetic strains, species, and/or ecosystem types, or of any other FSC-defined high conservation value forest attributes, is considered explicitly in decisions about whether restoration is necessary. Where necessary, forest restoration is incorporated into a landscape plan to re-establish, buffer, or provide adequate margins of safety for the persistence of these attributes.

2. Landscape-Level Standards

2.1 : The Landscape Plan(s)

SFF Standards	Score
2.1.1 The plan predicts ecological, social, and economic impacts of timber management over both the short term and the long term.	
2.1.2 The landscape plan is reviewed and, if necessary, revised at least every five years.	
2.1.2.1 New scientific and technical developments are evaluated and incorporated into landscape-level plans as appropriate.	
2.1.2.2 Data are collected so that the following indicators can be evaluated and incorporated into landscape-level plans as appropriate: (a) yield of all forest products harvested (b) growth rates, regeneration and condition of the forest (c) composition and observed changes in the flora and fauna (d) environmental and social impacts of harvesting and other operations (e) costs, productivity, and efficiency of forest management	
2.1.2.3 Revisions of plans account for changes in landscape condition due to disturbance.	
2.1.3 While respecting the confidentiality of sensitive information, there is publicly available documentation of the contents of the landscape plan, including at least a summary of the following elements: (a) Management objectives. (b) Description of the forest resources to be managed, environmental limitations, land use and ownership status, socio-economic conditions, and a profile of adjacent lands. (c) Description of silvicultural and/or other management system, based on the ecology of the forest in question and information gathered through resource inventories. (d) Rationale for rate of annual harvest and species selection. (e) Provisions for monitoring of forest growth and dynamics. (f) Environmental safeguards based on environmental assessments. (g) Plans for the identification and protectin of rare, threatened and endangered species. (h) Maps describing the forest resource base including protected areas, planned management activities and land ownership. (i) Description and justification of harvesting techniques and equipment to be used.	
2.1.3.1 Classification of planning information as confidential is evaluated by SFF on a case-by-case basis.	

2.1.4 Clear evidence is given of the applicant's legal rights and obligations to plan and manage the landscape.

2.1.5 Vision, goals, and objectives for all aspects of landscape-level planning and operations are stated.

2.1.6 Descriptions and maps of the landscape character and condition are provided.

2.1.7 The protected landscape network, large landscape reserves, and forest use zones are described and mapped.

2.1.7.1 Especially important in these descriptions and maps are plans for identification and protective measures for rare, threatened, and endangered genetic strains, species, and ecosystem types.

2.1.8 Social and economic needs of local communities are analyzed and provisions for these needs are described.

2.1.8.1 Consultations carried out are documented, including contact persons to confirm the results of consultations.

2.1.8.2 Sites of special cultural, spiritual, or aesthetic value are identified and protective measures specified.

2.1.9 Layout maps, descriptions, and the schedule of landscape-level access and other infrastructure development, maintenance, and control are provided. Construction specifications are given.

2.1.10 Ecologically sustainable levels of timber extraction at the landscape level are estimated and broken down by species.

2.1.10.1 These estimates are based on conservative growth and yield data.

2.1.10.2 These estimates incorporate landbase reductions (i.e. netdowns) that account for areas reserved from timber cutting (e.g. in the protected landscape network and non-timber human use zones).

2.1.11 Indicators of success in meeting stated objectives are identified, as well as a schedule for monitoring these indicators and reporting results.

2.1.11.1 Identified indicators provide for both early-warning and long-term feedback.

2.1.11.2 Indicators include:

(a) yield of all forest products harvested

(b) growth rates, regeneration, and condition of the forest

(c) composition and observed changes in the flora and fauna

(d) environmental and social impacts of harvesting and other operations

(e) costs, productivity, and efficiency of forest management

2.2 : Protected Landscape Network

A protected landscape network for the forest landscape being planned shall be designed to account for the landscape character and condition. The components of a protected landscape network include protected riparian ecosystems; ecologically sensitive sites; old growth nodes; additional reserves for ecosystem representation; additional reserves for protection of rare, threatened, and endangered genetic strains, species, and ecosystems; additional reserves for high conservation value forest; and cross-valley corridors/landscape linkages.

SFF Standards	Score
2.2.1 : Protected riparian ecosystems shall account for landscape character and condition.	
2.2.1.1 Design of protected riparian ecosystems is based on appropriate data.	
2.2.1.1.1 Forest character and condition are analyzed and documented as factors determining permitted uses of protected riparian ecosystems.	
2.2.1.1.2 The precise extent of riparian ecosystems is determined through field assessment prior to human use. Provisional boundaries may be established without field assessment for the purposes of landscape-level planning.	
2.2.1.1.3 Where field assessments of the extent of riparian ecosystems have not been carried out, planning sets minimum provisional riparian buffers of 50 m on all sides of the riparian ecosystem, with no logging planned in the buffer.	
2.2.1.2 No logging occurs in riparian zones (as opposed to riparian zones of influence).	
2.2.1.3 Buffers to protect riparian zones of influence are designed to maintain or, if necessary, restore the following composition, structures, and functioning:	
2.2.1.3.1 shading of watercourses or water bodies for water temperature control	
2.2.1.3.2 inputs to watercourses or water bodies of leaves, twigs, branches, and a full range of fallen tree sizes for nutrient cycling, maintenance of water chemistry, and maintenance of natural stream morphology	
2.2.1.3.3 invertebrate, reptile, amphibian, bird, small mammal, and large mammal habitats	
2.2.1.3.4 stream bank stability, including the contribution of tree roots and other structures	
2.2.1.3.5 use as a movement corridor by various species of animals	
2.2.1.3.6 special habitat (especially for rare, threatened, or endangered genetic strains and species)	

2.2.1.3.7 surface erosion mitigation by tree and other vegetative cover

2.2.1.3.8 storage of water in floodplain

2.2.1.3.9 deposition of sediments on floodplain

2.2.1.3.10 landform and soil stability

2.2.1.3.11 soil drainage characteristics

2.2.1.3.12 depth to water-impermeable layer

2.2.1.3.13 depth to standing or moving ground water

2.2.1.4 Permitted uses of protected riparian ecosystems are designed to maintain full ecosystem functioning, including services to human communities. ☐

2.2.1.4.1 Conversion uses do not occur in protected riparian ecosystems.

2.2.1.4.2 Where watercourses and water bodies are located within domestic and/or agricultural watersheds, priority is normally given to the water use in a separate "watershed protection" forest use zone. Where necessary to protect water values, protection is greater than for riparian ecosystems in timber zones.

2.2.1.4.3 Where field assessment has identified stable areas within the riparian zone of influence (not the riparian zone), very low levels of timber extraction may occur.

2.2.2 : Ecologically sensitive sites shall be protected from the influence of timber management.

2.2.2.1 Ecologically sensitive sites are accurately identified. Ecologically sensitive sites include: ☐

2.2.2.1.1 shallow soils (generally, less than 30 cm/12 inches to an impermeable layer or unmodified parent material).

2.2.2.1.2 very dry or very wet sites.

2.2.2.1.3 very steep slopes (generally, greater than 60% slope gradient).

2.2.2.1.4 broken slopes (abrupt slope changes, including gullies, occurring regularly across a small landscape).

2.2.2.1.5 very dry climates (generally, less than 25 cm/10 inches of precipitation annually).

2.2.2.1.6 cold soils that limit biological activity, particularly soil nutrient cycling.

2.2.2.1.7 snow-dominated forests characterized by open-canopied forest stands (e.g. park land forest ecosystems).

2.2.2.1.8 areas demonstrating evidence of past instabilities.

2.2.2.2 Permitted uses on ecologically sensitive sites are designed to protect full forest functioning.

2.2.2.2.1 Timber management and conversion uses generally do not occur on ecologically sensitive sites without justification from an ecosystem-based viewpoint after field assessment. Any proposed use on an ecologically sensitive site shows how both on- and off-site negative impacts are *prevented*, as opposed to mitigated. "Prevention" must consider long timeframes of at least 100 years.

2.2.3 : Old growth nodes shall be designed to support the persistence of species that prefer or depend on that forest phase.

2.2.3.1 Nodes are of sufficient size and number to support the persistence of species that prefer or depend on that forest phase.

2.2.3.1.1 Nodes are as large as possible or large enough to provide 50% forest-interior habitat.

2.2.3.1.2 The area of the landscape in old growth nodes approximates natural frequency and distribution.

2.2.3.1.3 Unless otherwise justified relative to 2.2.3.1.2 above, as much area as possible, and not less than 30% of lands, are in old growth nodes and, if less than 30% of lands are composed of old growth, old growth recruitment nodes. The area total for old growth nodes includes old growth on ecologically sensitive sites and in cross-valley corridors/ landscape linkages.

2.2.3.2 Old growth nodes provide optimal representation of naturally occurring ecosystem types.

2.2.3.3 Old growth nodes are designed to include as much high conservation value forest area as possible/feasible.

2.2.3.4 Permitted uses of nodes are designed to protect full forest functioning.

2.2.3.4.1 Timber management, conversion uses, and wildcrafting do not occur in nodes.

2.2.4 Additional reserves are designed as necessary to fill gaps in the protected landscape network's representation of the full natural range of ecosystem types.

2.2.4.1 Permitted uses of additional representative reserves are designed to protect full forest functioning.

2.2.4.1.1 Timber management, conversion uses, and wildcrafting do not occur in additional reserves.

2.2.5 Additional reserves are designed where necessary for adequate protection of identified rare, threatened, or endangered genetic strains, species, or ecosystem types in the landscape.

2.2.5.1 Permitted uses of additional reserves for rare, threatened, or endangered genetic strains, species, or ecosystem types are designed to protect full forest functioning.

2.2.5.1.1 Timber management, conversion uses, and wildcrafting do not occur in additional reserves.

2.2.6 Additional reserves are designed where necessary to protect the relevant attributes of identified high conservation value forests

2.2.6.1 Permitted uses of additional reserves for high conservation value forests are designed to protect full forest functioning

2.2.7 : In landscapes of 20,000 hectares or larger, whole protected watershed(s) shall provide additional ecological protection appropriate to the scale and means of the timber management enterprise.

2.2.7.1 Whole protected watersheds are:

2.2.7.1.1 at least 10% of the landscape's forested area and at least 5% of the landscape's timber management zones.

2.2.7.1.2 as large as possible or at least 2000 ha.

2.2.7.2 Whole protected watersheds provide optimal representation of naturally occurring ecosystem types within the larger landscape.

2.2.7.3 Whole protected watersheds are designed to include as much high conservation value forest area as possible/feasible.

2.2.7.4 Location of whole protected watersheds provides high-quality habitat for identified rare, threatened, and endangered genetic strains, species, and/or ecosystem types.

2.2.7.4.1 Whole protected watersheds are located as far from human settlements as possible.

2.2.7.4.2 Where possible, whole protected watersheds are rich in rare, threatened, or endangered genetic strains, species, and/or ecosystem types.

2.2.7.5 Permitted uses of whole protected watersheds are designed to protect full forest functioning.

2.2.7.5.1 Timber management, conversion uses, and wildcrafting do not occur in whole protected watersheds.

2.2.8 Connectivity among elements of the protected landscape network is provided by cross-valley corridors, landscape linkages, or other means.

2.2.8.1 Connectivity among elements of the protected landscape network provides for a wide range of forest organism movements.

2.2.8.1.1 Corridors and/or linkages avoid features that impede the movement of large mammals, such as cliffs and rock bluffs.

2.2.8.1.2 Corridors and/or linkages provide optimal representation of naturally occurring ecosystem types within the larger landscape.

2.2.8.1.3 Corridors and/or linkages normally are at least 300 metres wide. Where options for corridors or linkages are limited because of severe forest degradation, portions of some corridors or linkages may be less than 300 metres in width.

2.2.8.1.3.1 Where partial cutting, narrow roads, and other practices required by SFF Standards are implemented, narrower corridors and/or linkages may be acceptable.

2.2.8.2 Logging or other permitted uses in or adjacent to corridors and/or linkages do not risk compromising the existing potential for forest organism passage. | |

2.3 : Ecologically Responsible Forest Use Zones

Once the protected landscape network has been established, ecologically responsible forest uses by humans shall be zoned in appropriate places within the forest landscape for optimization of benefits. This means diversifying forest services and products and maximizing the number of people who benefit from those services and products. Ecologically responsible non-timber forest uses may include culture, watershed protection, wildcrafting/non-timber forest products, tourism, conversion zones, timber management, or other uses.

In British Columbia, timber management enterprises with licenses on public land usually have few rights to manage other forest uses. This limited decision-making authority will be taken into account by SFF evaluations, and it normally will not threaten the eligibility of the timber management enterprise for certification.

SFF Standards		Score
2.3.1	The timber management enterprise demonstrates understanding of, and commitment to maintain, the full range of non-timber products and services affected by operations. The "full range" of non-timber products and services includes but is not limited to climate regulation, human and non-human water supplies, nutrient cycling, recreation, cultural values, spiritual values, etc.	
2.3.2	: Extractive uses (timber management, hunting, fishing, wildcrafting, etc.) do not extract rare, threatened, or endangered genetic strains or species.	
2.3.3	Forest use zones shall be established in a balanced way across the forest landscape, so that all forest users, both human and non-human, are provided with fair and fully functioning forest areas to meet their needs.	

2.3.3.1 In areas where First Nations aboriginal rights and title have not already been adequately provided for, First Nations people receive priority over other human cultures in zoning decisions.

2.3.3.2 There is evidence that a broad range of human and non-human needs in the landscape have been researched and accounted for in zoning.

2.3.3.3 Identified socio-economic high conservation value forest attributes are preferred for protection.

2.3.4 Forest use zoning shall take precautionary account of the ecological sensitivity and special ecological values (for example, identified ecological high conservation value forest attributes) of the forest areas under consideration.

2.3.4.1 Field assessment of a site's ecological sensitivity to disturbance precedes approval of any human forest use.

2.3.4.2 Ecologically responsible forest use zones are generally located between parts of the protected landscape network. Some soft forest uses may overlap portions of the protected landscape network.

2.3.4.2.1 Human forest uses are normally zoned for stable or moderately stable ecosystems.

2.3.4.2.2 Only the stable inclusions in moderately stable ecosystems are normally zoned for human uses that result in significant modification of ecosystem composition and structures (for example, timber management, agriculture, ranching, settlement, tourism facilities, and mining).

2.3.4.2.3 Wildcrafting is excluded from old growth nodes, whole protected watersheds, and other reserves. Wildcrafting may occur in cross-valley corridors or landscape linkages and in some ecologically sensitive areas, specifically steep slopes and broken terrain.

2.3.5 : No forest areas are converted to plantations.

2.3.6 Conversion uses, such as agriculture, ranching, mining, settlement, and non-forest tourism, occur only where conversion:

2.3.6.1 includes less than 3% of the area being planned.

2.3.6.2 does not occur within the protected landscape network or large landscape reserves.

2.3.6.3 does not threaten any forest services or resources critical to the well-being of local communities.

2.3.6.4 does not occur in high conservation value forests.

2.3.6.5 does not occur in habitat necessary to maintain rare, threatened, and/or endangered genetic strains, species, or ecosystem types.

2.3.6.6 provides means for improved long-term ecological protection in other areas, for example, financial security to establish new ecological reserves.

2.3.6.6.1 The improvements in ecological protection thus secured substantially outweigh the predictable negative ecological impacts of the conversion use(s).

2.3.7 Where a particular portion of the landscape is zoned for more than one forest use, the timber management enterprise shall ensure that the cumulative impacts do not degrade forest composition, structures, and functioning.

2.3.7.1 Timber management in multi-use zones takes into account and allows for the ecological impacts of other uses.

2.3.7.2 RECOMMENDATION: Usually, one forest use should be established as the primary use in a particular forest use zone, and the needs of this forest use should be given priority over other uses zoned for the same area.

2.4 : Access Systems

The standards in this section apply to <u>landscape-level</u> access planning only. Stand-level access planning and construction are addressed in Section 3.6 below.

SFF Standards		Score
2.4.1	Roads and landings are excluded from ecologically sensitive sites.	
2.4.2	The intrusion of roads into or through the protected landscape network is minimized.	
2.4.3	Access systems are efficient.	
2.4.4	The total density of main and branch roads does not exceed 1.5 km/km^2 within timber management zones.	
2.4.4.1	RECOMMENDATION: The total density of main and branch roads, especially in cable logging systems, should not exceed 1 km/km^2	

2.5 : Large Landscape Reserves

In British Columbia, establishment of large reserves such as those described in this section is generally the right of government bodies only. Timber management enterprises usually will have no authority to implement the standards described here. Nonetheless, SFF Evaluation Teams will assess the applicability of these standards for every timber management enterprise evaluated. If the standards are unachievable, they may be waived.

SFF Standards	Score
2.5.1 Appropriate to the scale and means of the timber management enterprise, landscape plans for areas of more than 100,000 ha shall incorporate unmodified watersheds or combinations of watersheds as large landscape reserves.	
2.5.1.1 Large landscape reserves make up at least 20% of the lands under evaluation.	
2.5.1.2 Larger and more numerous landscape reserves are established in landscapes where timber management is designed to mimic larger stand-initiation disturbance events. That is, the bigger the cutting areas are, the bigger the reserves are.	
2.5.1.3 RECOMMENDATION: Where feasible, the size of large landscape reserves should be between 5 and 20 times larger than the largest natural disturbance in a particular landscape, in order to maintain ecological resiliency following a large-scale natural disturbance such as fire.	
2.5.1.4 Large landscape reserves provide optimal representation of naturally occurring ecosystem types within the larger landscape. Protection of rare, threatened, or endangered genetic strains, species, and/or ecosystem types is given priority.	
2.5.1.5 Large landscape reserves are designed to include as much high conservation value forest area as possible/feasible.	
2.5.1.6 Permitted uses of large landscape reserves are designed to protect full forest functioning.	
2.5.1.6.1 Conversion uses and timber management do not occur in large landscape reserves.	

2.6 : Reintroducing Natural Disturbances

In many cases, reintroduction of natural disturbances (e.g., low-intensity ground fires) in a landscape will result in considerable restoration benefits. However, reintroduction of natural disturbances also is often in conflict with various competing considerations (e.g., safety of nearby human settlements). Therefore, this section does not require the reintroduction of natural disturbance. Rather, the standards here apply only in cases where such reintroduction is a selected option.

SFF Standards		Score
2.6.3	Field assessments of landscape and stand character and condition are carried out prior to the reintroduction of natural disturbances, and incorporated into plans for re-introducing natural disturbances.	
2.6.4	Condition of the forest areas in question is ecologically suited to reintroduction of the disturbance(s). Forest condition does not present a risk of further degradation upon planned reintroduction of the disturbance(s).	
2.6.5	Reintroduced disturbance(s) are natural to the landscape.	

3. Stand-Level Standards

3.1 : The Stand-Level Plan(s)

The human, financial, and technical resources of the timber management enterprise will be considered in determining scores for this section. In many cases, limited resources will have a strong influence on compliance with SFF planning standards. These limitations will not necessarily be an obstacle to SFF certification.

SFF Standards		Score
3.1.1	The stand-level plan is reviewed and, if necessary, revised at least every five years.	
3.1.1.1	New scientific and technical developments are evaluated and incorporated into stand-level plans as appropriate to their relevance and the scale of operations.	
3.1.1.2	Monitoring data collected about indicators in Criterion 2.1.2.2 are evaluated and incorporated into stand-level plans as appropriate to their relevance and the scale of operations.	
3.1.1.3	Revisions of plans account for changes in stand condition due to disturbance.	
3.1.2	While respecting the confidentiality of sensitive information, there is publicly available documentation of the contents of the stand-level plan, including at least a summary of all elements listed in Criterion 2.1.3	
3.1.2.1	Classification of planning information as confidential is evaluated by SFF on a case-by-case basis.	
3.1.3	*(SMALL HOLDER only)* Relevant management considerations arising out of the landscape character and condition are briefly described.	
3.1.4	Clear evidence is given of the applicant's legal rights and obligations to plan and manage the stand(s).	
3.1.5	Vision, goals, and objectives for all aspects of stand-level planning and operations are stated.	
3.1.6	Descriptions and maps of the stand(s) character and condition are provided.	
3.1.7	The protected stand network and permanently reserved stand-level composition and structures are described and, as appropriate, mapped. Guidelines are given for selecting cut trees and reserved composition and structures.	
3.1.8	Measures to be taken to protect soil composition, structures, and functioning are described and, where appropriate, mapped.	
3.1.8.1	The maximum percentages of soil disturbance in the cutting area(s) are specified. Soil disturbance percentages are specified for haul roads, landings, skid roads, skidding routes, and other constructed features that disturb soils.	

3.1.9 Measures to be taken to protect hydrological functioning and water quality, quantity, and timing of flow are described and, where relevant, mapped.

3.1.10 Social and economic needs of local communities that will be satisfied by the proposed stand-level activities are summarized.

3.1.10.1 Consultations carried out are documented, including contact persons to confirm the results of consultations.

3.1.10.2 Sites of special cultural, spiritual, or aesthetic value are identified and protective measures specified.

3.1.11 Layout maps, descriptions, and the schedule of access and other infrastructure development, maintenance, and control are provided.

3.1.11.1 Layout maps include haul roads, skid roads, and landings.

3.1.11.2 Construction specifications are given.

3.1.11.3 RECOMMENDATION: Skid routes should also be field-located and mapped in the plan(s).

3.1.12 Ecologically sustainable levels of timber extraction at the stand level are estimated and broken down by species. The planned annual rate and species of timber cut are described and compared to sustainable levels.

3.1.12.1 Estimates are based on conservative growth and yield data.

3.1.12.2 These estimates incorporate landbase reductions (i.e. netdowns) that account for areas reserved from timber cutting (e.g. in the protected landscape network, non-timber human use zones, and the protected stand network).

3.1.12.3 These estimates incorporate timber volume reductions (i.e. netdowns) that account for permanently reserved composition and structure within cutblocks (e.g. full-cycle trees, large snags, and large fallen trees).

3.1.13 Descriptions, maps, and ecological rationale are given for:

3.1.13.1 extraction methods and equipment.

3.1.13.2 silvicultural practices.

3.1.13.3 felling guidelines.

3.1.13.4 other management strategies and prescriptions for meeting stated objectives of both landscape and stand-level plans.

3.1.14 A strategy for monitoring the impacts of timber management on forest growth and dynamics is described.

3.1.14.1 The written description of the monitoring strategy is appropriate to the scale and means of the timber management enterprise.

3.2 : Protected Stand Network

Regardless of the size of the forest area being planned, ecologically responsible activities must provide for a protected stand network of ecosystems within the stand. The protected stand network consists of similar parts and plays similar roles in maintaining forest functioning at the stand level as protected landscape networks play in maintaining forest functioning at the landscape level.

Within a stand, the protected stand network need not meet the area requirements for protected landscape networks. However, the protected stand network provides additional protection for sensitive ecosystems and rare ecosystems, as well as some connectivity.

SFF Standards	Score
3.2.1 : Small protected riparian ecosystems in the protected stand network shall account for stand character and condition.	
3.2.1.1 Design of small protected riparian ecosystems is based on appropriate data.	
3.2.1.1.1 Forest character and condition are analyzed and documented as factors determining permitted uses of protected riparian ecosystems.	
3.2.1.1.2 The precise extent of riparian ecosystems to be protected is determined through field assessment prior to human use.	
3.2.1.1.3 Where field assessments of the extent of riparian ecosystems have not been carried out, planning sets minimum provisional riparian buffers of 50 m on all sides of the riparian ecosystem, with no logging planned in the buffer.	
3.2.1.2 No logging occurs in riparian zones (as opposed to riparian zones of influence).	
3.2.1.3 Buffers to protect riparian zones of influence are designed to maintain or, if necessary, restore the following composition, structures, and functioning:	
3.2.1.3.1 shading of watercourses or water bodies for water temperature control	
3.2.1.3.2 inputs to watercourses or water bodies of leaves, twigs, branches, and a full range of fallen tree sizes for nutrient cycling, maintenance of water chemistry, and maintenance of natural stream morphology	
3.2.1.3.3 invertebrate, reptile, amphibian, bird, small mammal, and large mammal habitats	
3.2.1.3.4 stream bank stability, including the contribution of tree roots and other structures	
3.2.1.3.5 use as a movement corridor by various species of animals	
3.2.1.3.6 special habitat (especially for rare, threatened, or endangered genetic strains and species)	
3.2.1.3.7 surface erosion mitigation by tree and other vegetative cover	

3.2.1.3.8 storage of water in floodplain

3.2.1.3.9 deposition of sediments on floodplain

3.2.1.3.10 landform and soil stability

3.2.1.3.11 soil drainage characteristics

3.2.1.3.12 depth to water-impermeable layer

3.2.1.3.13 depth to standing or moving ground water

3.2.1.4 Seasonal ponds are identified and protected from the influence of timber management. ☐

3.2.1.4.1 No vehicles travel through the depression itself at any time.

3.2.1.4.2 When the pond is actually present, no vehicle or equipment travels within 30 m of the depression.

3.2.1.4.3 No ruts due to vehicle travel occur within 30 m of the depression at any time.

3.2.1.4.4 Trees are not felled into or across the depression.

3.2.1.4.5 Slash and silt are kept out of the depression at all times.

3.2.1.5 Permitted uses of protected riparian ecosystems are designed to maintain full ecosystem functioning, including services to human communities. ☐

3.2.1.5.1 Conversion uses do not occur in protected riparian ecosystems.

3.2.1.5.2 Where watercourses and water bodies are located within domestic and/or agricultural watersheds, priority is normally be given to the water use in a separate "watershed protection" forest use zone. Where necessary to protect water values, protection is greater than for riparian ecosystems in timber zones.

3.2.1.5.3 Where field assessment has identified stable areas within the riparian zone of influence (not the riparian zone), very low levels of timber extraction may occur.

3.2.1.6 Design of small protected riparian ecosystems is appropriate to the scale and means of the timber management enterprise. ☐

3.2.1.6.1 Where small riparian ecosystems and/or seasonal ponds are very frequent, design of buffers provides optimal ecological protection while ensuring financial viability of the timber management enterprise.

3.2.2 : Ecologically sensitive areas are protected from ecologically damaging forest uses.

3.2.2.1 Ecologically sensitive areas are accurately identified. Ecologically sensitive areas include: ☐

3.2.2.1.1 shallow soils (generally, less than 30 cm/12 inches to an

impermeable layer or unmodified parent material).

3.2.2.1.2 very dry or very wet areas.

3.2.2.1.3 very steep slopes (generally, greater than 60% slope gradient).

3.2.2.1.4 areas demonstrating evidence of past instabilities.

3.2.2.2 Permitted uses on ecologically sensitive areas are designed to protect full forest functioning.

3.2.2.2.1 Timber management and conversion uses generally do not occur on ecologically sensitive areas without justification from an ecosystem-based viewpoint after field assessment. Any proposed use on an ecologically sensitive area must show how both on- and off-site negative impacts are *prevented*, as opposed to mitigated. "Prevention" must consider long timeframes of at least 100 years.

3.2.3 Where necessary, additional reserved areas are designed for protection of rare, threatened, or endangered habitat niches/ecosystem types; for maintenance of resources for identified rare, threatened, and endangered genetic strains and species; and/or for maintenance or restoration of any other high conservation value forest attributes.

3.2.3.1 Permitted uses of additional reserves are designed to protect full forest functioning.

3.2.3.2 : Extractive uses (timber management, hunting, fishing, wildcrafting, etc.) do not extract rare, threatened, or endangered genetic strains or species.

3.2.4 Small-scale connectivity is provided within the stand.

3.2.5 Appropriate to the scale and means of the timber management enterprise, the protected stand network and other stand-level protective measures provide for maintenance of existing human uses within or adjacent to the lands.

3.3 : Stand Composition and Structures to Be Permanently Reserved from Cutting

Information about the character and condition of the stand must be used to select living trees, snags, and fallen trees that will be permanently reserved from cutting or other disturbance during construction and logging activities. Large structures (living trees, snags, and fallen trees) require the most time to replace through natural processes. Therefore, large structures generally must be given priority over smaller structures for protection.

SFF Standards	Score
3.3.7 : At least 10% of the dominant and co-dominant trees in each cutting unit are permanently reserved as full-cycle trees within the stand.	
3.3.7.1 RECOMMENDATION: 25% or more of the dominant and co-dominant trees in the cutting unit should be permanently reserved as full-cycle trees within the stand.	
3.3.8 Species, size, and spatial distribution of full-cycle trees maintains stand-level diversity in composition and structure.	
3.3.8.1 Full-cycle trees include representatives of all the different tree species on the site(s), and are among the stand's tallest trees of their respective species when they are designated.	
3.3.8.2 Full-cycle trees are generally well-distributed, with patchy variations in density. In fire successional forests, full-cycle trees may be more irregularly distributed and aggregated than those in wetter forests.	
3.3.8.3 The spatial distribution of full-cycle trees allows effective seedfall for natural patterns of regeneration throughout the entire cutting area.	
3.3.8.4 The spatial distribution of full-cycle trees provides for naturally distributed future replacements of existing large snags and large fallen trees.	
3.3.9 Large snag and large fallen tree counts after logging are 1 large snag and 6 large fallen trees per hectare or 100% of the original number, whichever is lower. Where large snag and large fallen tree counts are in a degraded state, appropriate restoration measures are taken.	
3.3.9.1 RECOMMENDATION: Large snag counts after logging should not be less than 3 per hectare.	
3.3.10 Species, sizes, decay classes, and spatial distribution of reserved large snags and large fallen trees maintain stand-level diversity in composition and structure. (6.3.8.4)	
3.3.10.1 Large snags and large fallen trees are generally well-distributed spatially, with patchy variations in density.	
3.3.10.2 Large snag and large fallen tree species, sizes, and decay classes are generally well-distributed.	
3.3.10.3 A majority of reserved large snags and large fallen trees are located away from roads and landings in order to create more viable habitat and safe working conditions.	

3.3.11 Decisions to fell snags for safety, instead of establishing no-work zones around them, are ecologically appropriate within the scale and means of the timber management enterprise, and based on appropriate information or assessments. Measures to replace snags felled for safety are ecologically appropriate within the scale and means of the timber management enterprise, as well as within safety concerns.

3.3.11.1 Where a snag that otherwise would be reserved is so decayed as to be a significant danger to forest workers, worker safety and stand structure are maintained through the following options, or combinations or variations of the options:

3.3.11.1.1 The first option is to protect the snag by aggregating other retained structures around the snag in a pattern approximating natural conditions for the ecosystem type.

3.3.11.1.2 The second option is to fell the snag, since it may be assumed that the snag is ready to enter its large fallen tree phase. When snags are felled to reduce hazards to workers and the large snag count thereby becomes less than 1 per hectare, stumps are left as high as is safely possible, and the timber management enterprise kills an unreserved dominant or co-dominant tree near the felled snag as a replacement.

3.3.12 Permanently reserved composition and structures in the stand are marked, mapped, or otherwise identified to ensure their protection through a succession of managers.

3.3.13 Provisions are made for replacing permanently reserved composition and structures when their status, form, decay class, etc. changes.

3.4 : Timber Management in Stable Portions of Protected Riparian Ecosystems

General standards for protected riparian ecosystems include standards for determining whether protected riparian ecosystems contain areas where very low-intensity logging may be permitted. If it is determined that very low-intensity logging may be permitted in protected riparian ecosystems, the standards given here shall limit the actual rates and patterns of cutting.

SFF Standards	Score
3.4.1 Timber management takes place only in stable areas within riparian zones of influence (i.e., NOT within riparian zones).	
3.4.2 Timber management does not expose mineral soil within 20 m of the watercourse or water body, and any exposure of mineral soil at any distance is demonstrated not to be a direct source of siltation.	
3.4.2.1 RECOMMENDATION: Timber management should not expose mineral soil within 30 m of the watercourse or water body. Exposure of mineral soil in the remainder of the protected riparian ecosystem should be less than 2% of protected riparian ecosystem areas approved for timber cutting.	
3.4.3 No standing or fallen dead trees are felled or removed from the protected riparian ecosystem.	
3.4.4 Timber cutting in protected riparian ecosystems accounts for windthrow hazards.	
3.4.4.1 Where windthrow hazard is determined by a credible assessment procedure to be moderate or high, no cutting takes place.	
3.4.4.2 Where windthrow hazard is determined by a credible assessment procedure to be low:	
3.4.4.2.1 only low-intensity partial cutting occurs.	
3.4.4.2.2 windfirm trees are not cut unless they compose more than 50% of the dominant and co-dominant trees. In these cases cutting does not deplete the proportion of windfirm trees to less than 50% of dominant and codominant trees.	
3.4.5 Trees are felled away from watercourses or water bodies, including any ephemeral or year-round tributaries, flood channels, and poorly drained areas.	
3.4.6 No vehicle or machine travels through or in the protected riparian ecosystem, except on crossings.	

3.5 : Pesticides (including Insecticides, Herbicides, and Fungicides) Synthetic Fertilizers, and Other Chemicals; Pollution and Waste Control

SFF Standards	Score
3.5.1 : Pesticides, synthetic fertilizers, and other chemicals are not used except for restoration purposes.	
3.5.2 : Use of pesticides, synthetic fertilizers, and other chemicals minimizes ecological damage and safety hazards, and is target-specific.	
3.5.2.1 In some restoration applications where eradication of introduced species is required, use of some pesticides, synthetic fertilizers, or other chemicals may occur for short terms and for very specific purposes. World Health Organization 1A/1B substances, chlorinated hydrocarbons, and internationally banned chemicals are not permitted under any circumstances.	
3.5.2.2 The use of any pesticides, synthetic fertilizers, or other chemicals is supported by:	
3.5.2.2.1 clear explanation of why more ecosystem-based management, manual treatments, or other approaches are not effective.	
3.5.2.2.2 demonstration that the chemicals proposed for use are effective in achieving the restoration objective.	
3.5.2.2.3 demonstration that the chosen pesticides, synthetic fertilizers, or other chemicals will not persist, remain toxic or biologically active, or accumulate in the food chain beyond their intended use.	
3.5.2.2.4 specification and implementation of a schedule and procedures for reduction and elimination of pesticides, synthetic fertilizers, or other chemical use.	
3.5.2.2.5 documented training and equipment maintenance procedures for the safest, most target-specific application possible.	
3.5.2.2.6 documented contingency plans for spillages.	
3.5.3 Stands and trees are managed for resistance to fire, wind, disease, insect activity, and mammal activity. Unnatural uniformity in genetics, species, individual ages, and ecosystems, which can result in too much fire and windthrow risk and favorable insect and pathogen habitat at one time, is avoided.	
3.5.4 : No exotic species or genetically modified organisms are introduced or propagated for the purposes of pest control.	
3.5.5 Timber management activities comply with all national and international laws and protocols relevant to biological control agents.	
3.5.6 Maintenance of all equipment and processing or other facilities is sufficient to minimize pollution.	
3.5.7 All toxic and inorganic wastes are disposed of properly.	

3.5.7.1 A policy exists, and is implemented, to dispose properly of toxic and inorganic wastes.

3.5.7.2 Appropriate on-site facilities exist for the collection of wastes.

3.5.7.3 There are appropriate contingency plans for spills or other accidents involving fuels and oils.

3.5.7.4 RECOMMENDATION: Biodegradable oil and other biodegradable products should be used when available.

3.5.7.5 RECOMMENDATION: Whenever possible, operations should promote and participate fully in local recycling and reuse programs for toxic and non-organic wastes and containers.

3.6 : Roads and Other Constructed Features

Roads must be constructed to the highest of standards in order to minimize soil, water, and ecosystem degradation. Soil compaction, soil erosion, soil displacement, water siltation and pollution, mass soil movements, and concentration of water are the primary sources of ecosystem degradation to be minimized.

SFF Standards	Score
3.6.1 Main roads shall be located to minimize ecosystem degradation and to maintain full forest functioning.	
3.6.1.1 Roads generally are not located on ecologically sensitive sites and smaller sensitive areas.	
3.6.1.1.1 Main roads, spur roads, skid roads, and landings are fit into the terrain and located as much as possible on stable ecosystems and stable portions of moderately stable ecosystems.	
3.6.1.2 Keeping roads on stable terrain is given priority over straight road alignments that encroach on sensitive sites, require excessive cuts and fill to maintain straight alignment, or are designed for high-speed travel.	
3.6.2 Right-of-way width for all roads shall be minimized, with no unnecessary disturbance on cut slopes, fill slopes, and road surface.	
3.6.2.1 Rights-of-way are generally less than 12 m, measured from the top of the cut slope to the toe of the fill slope, unless otherwise justified from a site-specific, ecosystem-based viewpoint.	
3.6.2.2 Turn-outs, which may be wider than 12 m, are frequent enough on main roads and spur roads to provide safe operating conditions.	
3.6.3 Design of road drainage structures shall maintain near-natural drainage patterns and minimize concentration of flow.	
3.6.3.1 Ditches do not discharge directly into water bodies or watercourses.	

3.6.3.2 Take-off ditches, check dams, settling ponds, or other equally effective structures are constructed in ditches as necessary to keep water from discharging directly into watercourses or water bodies.

3.6.3.3 Culverts and/or cross-drains are installed with a size, frequency, and design adequate to allow natural upstream fish migration and to avoid ponding, siltation, and erosion.

3.6.3.4 Where possible in safety and appropriate to climate and ecological characteristics:

3.6.3.4.1 surfaces of roads are outsloped, without raised berms that would prevent water from draining in a relatively natural pattern across the road and down slope.

3.6.3.4.2 frequent rolling dips are constructed to ensure that draining water does not concentrate on roads.

3.6.3.5 RECOMMENDATION: Construction of ditches should be limited to areas where these are necessary to maintain operability.

3.6.4 The road construction process shall minimize ecosystem degradation and maintain full forest functioning. ☐

3.6.4.1 Mechanical disturbance of soils during road construction, when added to soil disturbance from skidding, landings, and other logging activities, is less than 10% of the cutting unit area.

3.6.4.2 After road construction, parts of the right-of-way except the running surface are restored to natural vegetation.

3.6.5 Design of riparian ecosystem crossings shall minimize ecosystem degradation and maintain full forest functioning. ☐

3.6.5.1 Crossings are minimized.

3.6.5.2 The angle formed by crossings with water flow is as close as possible to 90 degrees. Direction and velocity of water flow are not altered by crossings.

3.6.5.3 Crossings maintain fish passage and watercourse bed structure.

3.6.5.4 Crossings are designed to accommodate the 100-year flood event.

3.6.5.5 RECOMMENDATION: Bridges or open-bottom culverts should be preferred for crossings, including crossings of wetlands and ephemeral streams.

3.6.6 The riparian ecosystem crossing construction process shall minimize ecosystem degradation and maintain full forest functioning. ☐

3.6.6.1 During crossing construction, fording of the stream with machinery is kept to a minimum.

3.6.6.2 Stream beds are restored to their original condition immediately following construction activities.

3.6.6.3 Any materials excavated or disturbed during construction are kept from entering the stream flow.

3.6.6.4 All fill and construction debris are removed from the protected riparian ecosystem.

3.6.7 Main roads and branch roads shall be located and constructed as permanent fixtures within the forest landscape and forest stand. ☐

3.6.7.1 Roads are constructed for long-term durability, including surfacing with gravel where roads are heavily used.

3.6.7.2 When not in use, roads may be temporarily deactivated to reduce risk of ecological degradation and to control access to other interests. Deactivation minimizes ecological damage to soils and water. Ecologically responsible deactivation procedures may include:

3.6.7.2.1 establishing cross drains and water bars as necessary.

3.6.7.2.2 installing and maintaining sediment traps.

3.6.7.2.3 ongoing maintenance of all drainage structures.

3.6.7.2.4 other measures.

3.6.8 Roads are not used during periods of instability. ☐

3.6.8.1 Roads are not used by vehicular traffic under spring break-up conditions, fall freeze-up conditions, or following heavy rains until road surfaces are dry enough that erosion and rutting will not occur.

3.6.9 Road maintenance prevents negative ecological impacts arising from use and climatic forces. ☐

3.6.10 Old roads that cannot be improved to meet SFF standards are used only where the construction of a new road would cause more long-term degradation of forest functioning than the old road. ☐

3.7 : Skidding and Yarding Systems

SFF Standards	Score
3.7.1 : Ground-based logging systems shall be designed to minimize ecosystem degradation and maintain full forest functioning.	
3.7.1.1 Ground-based logging systems are limited to slopes of less than 45% where well-spaced slope breaks exist, and to slopes of less than 30% where well-spaced slope breaks do not exist.	
3.7.1.2 Landings, skid roads, and skidding routes generally are not located on ecologically sensitive sites and smaller sensitive areas.	
3.7.1.3 Together, the total area of soil disturbance from main roads, branch roads, landings, skid roads, and skidding routes is less than 10% of the area of cutting units.	
3.7.1.4 Landings, branch roads, skid roads, and skidding routes are, as much as possible, designed as permanent components of timber management zones.	
3.7.1.4.1 Roads are constructed for long-term durability, including surfacing with gravel where roads are heavily used.	
3.7.1.4.2 When not in use, roads may be temporarily deactivated to reduce risk of ecological degradation and to control access to other interests. Deactivation minimizes ecological damage to soils and water. Ecologically responsible deactivation procedures may include:	
3.7.1.4.2.1 establishing cross drains and water bars as necessary.	
3.7.1.4.2.2 installing and maintaining sediment traps.	
3.7.1.4.2.3 ongoing maintenance of all drainage structures.	
3.7.1.4.2.4 other measures.	
3.7.1.4.3 Landings are pre-located in the field prior to logging.	
3.7.1.5 RECOMMENDATION: All skid roads and, as much as possible, skidding routes (i.e. where a constructed skid road is not developed) should be pre-located in the field prior to the commencement of logging operations.	
3.7.2 : Cable yarding and aerial yarding systems shall be designed to minimize ecological degradation and maintain full forest functioning	
3.7.2.1 Logging with any system is done on slopes less than 60%, unless credible field assessment determines that the risk of forest ecosystem degradation, from both stand and landscape perspectives, is negligible.	
3.7.2.2 Soil disturbance from cable yarding systems, including spur roads, main roads, and backspar roads, is less than 7% of the cutting unit areas.	
3.7.3 (Bonus points only — negative score is not possible) Specific practices are implemented that reduce disturbance caused by dragged logs during skidding. Examples of such practices include winter logging on a deep, consolidated snow pack; and suspending leading log ends above the ground during skidding.	

3.8 : Ecologically Responsible Cutting Rates and Patterns

Natural successional patterns analyzed and described as part of the forest character form an important part of the basis for cutting rates and patterns. Understanding successional patterns helps to design cutting to "mimic" natural disturbances.

Mimicking of natural disturbances can never be perfect, since the removal of tree bodies by logging has no equivalent in common natural disturbances. However, within this limitation, cutting rates and patterns shall be designed to closely resemble or, as much as possible, mimic the landscape and stand's natural patterns of disturbance and succession. This section applies what little knowledge we have of natural forest disturbance and succession to the design of ecologically responsible timber cutting.

SFF Standards	Score
3.8.1 : General Standards for Cutting Rates and Patterns	
3.8.1.1 Frequency of entries for logging is proportionately lower where volume cut per entry is higher.	
3.8.1.2 Where cutting patterns not described by *SFF Standards* are used, the cutting rate for any ten-years-or-greater period does not exceed 75% of the total growth in the stand being cut for the same period.	
3.8.1.3 : Whole tree harvesting does not occur. Roots and small woody material, including leaves, branches, and tops, are left in the forest where the tree is felled.	
3.8.1.4 Damage to trees left standing after extraction is generally less than 1% of the merchantable stems.	
3.8.3.2.1 Damage to more than 1% of the merchantable stems is justified ecologically and operationally.	
3.8.1.5 : Tree selection for cutting maintains and, where necessary, restores the natural range of variability in tree species, tree size, tree age, and spatial distribution.	
3.8.3.2.1 High-grading does not occur.	
3.8.3.2.2 Cutting favors retention, regeneration, and growth of species that are under-represented relative to their natural frequency and distribution.	
3.8.1.6 Tree cutting in mature stands only occurs when trees to be cut have a good economic value.	
3.8.1.7 : No forest areas are converted to plantations.	
3.8.2 Cutting Intensity and Successional Patterns	
3.8.2.1 Cutting design attempts to mimic disturbances natural to the stand and landscape, with the exception of large-scale windthrow or large-scale crown fires.	

3.8.2.2 Where the primary natural disturbance for the stand(s) causes the death of individual trees or small groups of trees, or where the primary natural disturbance is frequent, low-intensity fires: ☐

3.8.3.2.1 less than 20% of the merchantable trees are removed in any one cut, or

3.8.3.2.2 removal of more than 20% is justified by forest restoration objectives.

3.8.2.3 Where the primary natural disturbance is frequent, low-intensity fires: ☐

3.8.3.2.1 tree selection for cutting emphasizes small-diameter individuals and fire-intolerant species.

3.8.3.2.2 less than 20% of the volume of each cut consists of large trees and large snags for the stand in question.

3.8.3 RECOMMENDATIONS: **Cutting Patterns**

3.8.3.1 Uniform partial cut—Trees are removed in a regular, uniformly distributed cutting pattern throughout the stand. In other words, the crown closure is gradually and uniformly reduced throughout the stand. This cutting pattern is similar to conventional single tree selection systems. However, unlike single tree selection systems, this pattern complies with SFF standards for permanently reserved composition and structures.

3.8.3.2 Small patch cuts with canopy retention areas—Small patches are clearcut with "canopy retention areas" left around each patch. The patch size should be limited to 2 tree heights in any direction OR any other shape of the same area. A minimum of 30% of the cutting unit area, well distributed around the edges of all patch cuts, should be permanently protected from future patch-cutting in canopy retention areas to provide future sources of large old trees, large snags, and large fallen trees to the patch cut openings.

3.8.3.2.1 Up to 25% of the stems in the canopy retention areas may be cut at least 40 years after the patch cut.

3.9 : Tree Regeneration

Natural regeneration of trees offers the most effective means of maintaining both natural tree species diversity and the natural genetic diversity of trees in a particular forest ecosystem type. Biologically diverse, fully functioning forests must be maintained through time by preferring natural regeneration.

SFF Standards	Score
3.9.1 Natural regeneration of trees is preferred over planting.	
3.9.2 Natural successional processes, including the shrub-herb phase, are respected and maintained during regeneration of trees.	
3.9.3 Use of brush control, ground fires, and scarification shall be limited and, where it occurs, shall be justified from an ecosystem-based point of view.	
3.9.3.1 Brush control and site preparation are not done, except for the purpose of restoration and as described in 3.9.3.	
3.9.3.2 Preparation for regeneration protects, maintains, or restores full forest functioning.	
3.9.3.2.1 Broadcast slash burning does not occur.	
3.9.3.2.1.1 Burning of spot or piled accumulations of slash may be permissible, provided such activities have not been necessitated by whole tree harvest, and do not degrade ecosystem composition, structure, and functioning.	
3.9.3.2.2 Ground fires are prescribed only for the purpose of encouraging species whose regeneration is frequently associated with fire (e.g., lodgepole pine, Douglas-fir, western larch, ponderosa pine, black spruce, jack pine). Where ground fires are prescribed for this purpose the timber management enterprise demonstrates:	
3.9.3.2.2.1 that fire is critical to ecologically acceptable regeneration.	
3.9.3.2.2.2 that adequate planning and experience is available to properly manage the fire.	
3.9.3.2.2.3 that the fire will not degrade soil and water within the given ecosystem.	
3.9.3.2.3 Scarification may be permitted for the purpose of improving regeneration conditions. Where such activity takes place the timber management enterprise demonstrates:	
3.9.3.2.3.1 that scarification is necessary for ecologically acceptable regeneration.	
3.9.3.2.3.2 that scarification will not cause soil and water damage beyond the natural range of variability within the given ecosystem.	
3.9.3.2.3.3 that scarification will not degrade or exclude naturally occurring species of plants, animals, and microorganisms.	
3.9.4 Tree planting shall be justified from an ecosystem-based viewpoint.	
3.9.4.1 Tree planting is used only for the following purposes:	

3.9.4.1.1 to supplement inadequate natural regeneration. Planting for this purpose restores or maintains natural forest composition, structures, and functioning.

3.9.4.1.2 to contribute to the conservation of genetic resources.

3.9.4.1.3 to restore degraded lands where natural regeneration is inadequate to the restoration objectives.

3.9.5 Planting stock shall be suited to site conditions, properly handled, vigorous and healthy.

3.9.5.1 Seeds and seedlings are selected from as genetically similar a source as possible to the plant community already present on the site, i.e. species native to the area grown from local seed sources are required where possible.

3.9.5.2 Seedlings are grown and planted in ways that ensure development of the most natural root form possible. In most instances this will mean bare root stock, or some type of biodegradable cover for individual seeds to germinate on the site being regenerated.

3.9.6 : No exotic species or genetically modified organisms are introduced or propagated.

3.10 : Planning and Managing for Non-Timber Species and Natural Disturbances

All salvage operations must meet all applicable SFF standards in other sections, except for those that conflict with the standards in this section.

SFF Standards	Score
3.10.1 The predictable future influence of insects, disease, mammals, fire, wind, and non-commercial species on allowable timber cuts, timber values, recreational values, wildlife populations, and other non-timber values are taken into account and prepared or in plans.	
3.10.2 : Salvage of large-scale disturbance shall protect and maintain composition, structures, and functioning within natural ranges of variability.	
3.10.2.1 During salvage of wind or fire disturbance, live trees are not cut. During salvage of insect and pathogen damage, unaffected trees are not cut.	
3.10.2.2 Salvage operations remove less than 50% of the standing and fallen dead trees left after a large-scale disturbance.	
3.10.2.3 Trees that are removed are well-distributed spatially, by tree species, and by tree size.	
3.10.3 Salvage operations do not significantly increase risks of erosion, desertification, or excessive surface water runoff.	

4. Forest Restoration Standards

The need for forest restoration must be determined through assessment of landscape and stand character and condition. All restoration activities must meet the standards in this section. Financial means, scale of operations, and decision-making authority of timber management enterprises will be taken into consideration during SFF's evaluation of compliance with these restoration standards.

Forest restoration is defined as assisting natural processes to re-establish natural composition, structures, and functioning at all scales. A key part of this definition from the standpoint of ecological responsibility is that people assist natural processes, as opposed to attempting to fix natural processes. Much of the degradation caused by past timber management and other human activities will require centuries, if not millennia, to re-establish natural, fully functioning forests. Thus, forest restoration must not be viewed as a "quick fix" for past forest degradation.

Timber cut from forest lands under restoration may be certified only if applicable SFF certification standards for both restoration and timber management are met.

4.1 : General Forest Restoration Standards

SFF Standards	Score
4.1.1 The decision to restore forests is justified by the landscape and stand condition.	
4.1.2 The ecological scale(s) of restoration activities are appropriate and effective, within the means and decision-making authority of the timber management enterprise.	
4.1.3 Restoration activities protect natural composition and structures that have persisted in restoration areas.	
4.1.4 Where necessary, restoration activities reintroduce natural composition and structures.	
4.1.5 The species and genotype of reintroduced composition and structures are as close as possible to the species and genotype that was extirpated from the restoration area.	
4.1.6 Restoration activities approximate spatial and temporal aspects of natural succession and natural disturbances.	
4.1.7. Artificial restoration is used only as an essential interim step towards effective restoration of natural composition, structures, and functioning.	
4.1.8 : Exotic species are introduced or propagated only where no available indigenous species can fulfill the functions necessary for restoration.	
4.1.8.1 Where exotic species are introduced or propagated, they are demonstrated, *prior* to use, to be non-invasive through documented testing.	
4.1.8.2 Where exotic species are introduced or propagated, changes in forest composition and structure (animals, plants, soil, water, dead tree structures, etc.) are monitored to determine the impacts of the exotic species on the forest.	
4.1.8.2.1 If an exotic species is found to be invasive, plans are prepared and implemented to eradicate the species.	
4.1.9 : The predictable negative ecological impacts of forest restoration do not exceed the expected positive ecological benefits.	

GLOSSARY OF TERMS

Words in this document generally are used as defined in most standard English language dictionaries. However, some terms are not common in conventional approaches to timber management, while others are defined differently in an ecosystem-based context than in a conventional context. New terms, familiar terms used in a new way, and other important terms are understood as defined below:

artificial restoration — restoration activities that alter forest composition and structures in ways that do not approximate disturbances or successional patterns that are natural for the landscape or stand.

biological diversity (= biodiversity) — the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species and of ecosystems. (see Convention on Biological Diversity, 1992)

biological diversity values — the intrinsic, ecological, genetic, social, economic, scientific, educational, cultural, recreational and aesthetic values of biological diversity and its components. (see Convention on Biological Diversity, 1992)

biological control agents — living organisms used to eliminate or regulate the population of other living organisms.

chain of custody — the channel through which products are distributed from their origin in the forest to their end-use. (see also limited chain of custody)

character (of a forest ecosystem) — the natural range of variability in composition, structures, and functioning at all scales in the forest. A description of forest character explains "how the forest works" — that is, what compositions and structures are necessary to maintain what functions. For example, forests that have frequent fires have different biophysical and ecological characteristics than forests where wind and root decay are the primary agents of disturbance. For another example, some forests are characterized by steep slopes, shallow soils, and well-defined drainage patterns, while other forests have gentle slopes, cold soils, and diffuse drainage patterns. These differences in biophysical characteristics affect the plant, animal, and other species that will be found in the forests. A knowledge of how the forest works provides a basis for determining essential composition and structures that are necessary in order to protect and maintain ecosystem functioning while meeting human needs.

chemicals — the range of fertilizers, insecticides, fungicides, and hormones that are used in timber management.

composition (of a forest ecosystem) — the parts that make up a particular forest ecosystem, such as the climate, the different species of plants and animals, the type of soil, and the slope gradient of the terrain.

condition 1. (of a forest ecosystem) — the cumulative impacts to natural forest composition, structures, and functioning from human exploitation or modification. An ecosystem's condition may be placed at any point in a range from "severely degraded" to "unmodified". Information collected about the condition of landscapes and stands forms the ecological basis for deciding whether restoration measures are necessary. **2. (of certification) —** a requirement of planning or practices that a certified operation must satisfy according to a schedule, agreed upon in advance, in order to maintain certification.

connectivity — a measure of how well different areas, patches, stands, ecosystem types, and landscapes are connected in a way that provides for movement of the full range of indigenous plants and animals at all life stages. Natural landscapes and smaller areas provide for movement of plants and animals throughout the whole of the forest. Modified landscapes and smaller areas usually limit movement significantly, and therefore require specific planning measures to protect, maintain, and restore connectivity. Important ways to achieve connectivity at the landscape scale include protected riparian ecosystems, cross-valley corridors, landscape linkages, fully functioning human use zones, and "stepping stone" reserves. Within stands, connectivity may be maintained through large fallen trees; continuous, natural tree canopies; patches of full-cycle trees and snags; ephemeral streams; and other natural composition and structures.

conversion (of a forest) — permanent modification of a forest ecosystem for a non-forest human use such as settlement, agriculture, mining, etc.

conversion (forest) uses — uses that unavoidably degrade forest composition, structure, and functioning to provide for a specific human use. Examples of conversion uses are agriculture, ranching, settlement, mining, and extensive tourist facilities. As much as possible, these activities should be designed to maintain minimal levels of forest composition and structure, which can also benefit the conversion use. For example, forests and forest organisms provide pest control and furnish high quality water to farms, ranches, and rural communities.

criterion (pl. criteria) — a category of conditions or processes by which sustainable timber management can be evaluated. A criterion is characterized by a set of related indicators which are monitored periodically to assess change; a means of judging whether or not a principle (of forest stewardship) has been fulfilled. Criteria form the second hierarchical level (below FSC Principles) of standards.

cross-valley (movement) corridors — protected travel routes for animals and plants to cross the ridges that separate one riparian ecosystem from another. Cross-valley corridors are not "natural"; before human beings began extensive modifications of forest landscapes, animals moved freely throughout, and occupied all of the landscape. However, with human modification of forests, cross-valley corridors have become a necessary component of forest landscape plans in order to provide protected travel corridors and habitat niches through human use zones.

customary rights — rights that result from a long series of habitual or customary actions, constantly repeated, that have, by such repetition and by uninterrupted acquiescence, acquired the force of a law within a geographical or sociological unit.

disturbance (of forests) — any discrete force, for instance fire, wind, disease, insects, or logging, that significantly alters forest composition, structure, and/or functioning. Natural disturbances include all historical disturbances that influenced forests prior to European contact, including those resulting from First Nations' use.

ecological limits — biophysical and ecological characteristics that indicate that certain human uses would carry a high risk of unnacceptable modification or degradation of forest ecosystem functioning. Common ecological limits include shallow soils, very dry or very wet sites, steep slopes, broken slopes (abrupt slope gradient changes occur regularly across a small landscape), very dry or cold climates, cold soils, snow-dominated forests characterized by open-canopied forest stands, and areas showing evidence of past instabilities.

ecological sensitivity to disturbance — the potential for ecosystem damage occur as a result of ignoring ecological limits during human use.

ecologically sensitive sites, ecologically sensitive areas — areas where the ecological sensitivity to disturbance is too high to support timber management or conversion uses.

ecologically responsible forest use — an ecosystem-based approach to planning and carrying out human forest uses that gives priority to the protection, maintenance, and (where necessary) restoration of whole ecosystems.

ecologically responsible timber management — one type of ecologically responsible forest use. SFF refers to "timber" management instead of "forest" management in this case, because it is not possible for humans to manage a forest in all its complexity and biological richness. The best we can do is to allow the forest to manage itself, as it always has done. Ecologically responsible timber management plans and activities are developed and carried out in ways that protect, maintain, and (where necessary) restore a fully functioning forest ecosystem at all possible temporal and spatial scales. Forest composition, structures, and functioning are maintained, from the largest landscape to the smallest forest community, in both the short and long terms.

ecosystem — a place "where all plants, animals, soils, waters, climate, people, and processes of life interact as a whole. They may be small, such as a rotting log, or large, such as an entire continent; smaller ecosystems are subsets of larger ones. All ecosystems have flows of things--organisms, energy, water, air, nutrients--moving among them." (USDA Forest Service, Pacific Northwest Research Station, 1996) Ecosystems are relatively homogeneous forest areas delineated by their biological and physical characteristics, and by their ecological limits or lack of ecological limits.

ecosystem-based — giving priority to the protection, maintenance, and, where necessary, restoration of fully functioning forests at all spatial scales in both the short and long terms.

ecosystem type—a generalized grouping of ecosystems, based on similarities of condition, composition, structures, and/or functioning.

endangered species — any species which is in danger of extinction throughout all or a significant portion of its range.

exotic species — an introduced species not native or endemic to the area in question.

forest functioning/forest functions — processes of flow and change that connect forest composition and structures with each other, supplying materials and energy essential to the continued existence of the composition and structures. General examples of forest functions are growth of living organisms, connections between habitat resources, death and decomposition of vegetation, and water filtration, storage, and temperature regulation.

forest gate — the point, established by an SFF timber management Evaluation Team, that represents the end of a verified limited chain of custody. Examples of a forest gate are a roadside collection point, a yard for lumber milled on-site, or a point of exit from the applicant or certified lands.

forest integrity (= forest character) — the composition, dynamics, functions and structural attributes of a natural forest.

forest-interior habitat — forest areas over 200 metres from the nearest edge adjacent to non-forest or a very young forest stand.

forest management/manager (= timber manager/management) — the people responsible for the operational management of the timber resource and related forest values, services, and resources, as well as the management system and structure of the enterprise, and planning and field operations.

full-cycle tree — a tree that is permanently reserved from cutting or disturbance, in order that it can complete a full life cycle, from seed to snag to humus.

fully functioning forest ecosystem — a forest ecosystem that carries out the full complement of functions natural to its type, within their natural ranges of intensity, productivity, and extent. To the best of human knowledge, a forest ecosystem cannot function fully unless natural biodiversity of all types—genetic, species, ecosystem, and structural—is maintained at all scales of time and space. In fact, the dependence is mutual, since forest functioning in its turn determines and maintains biodiversity. When biodiversity is degraded, so is functioning; when functions are suppressed, biodiversity declines. Together these two aspects of fully functioning forest ecosystems constitute life as we know it in forest lands. Maintaining biodiversity does not imply an absence of change; a fully functioning forest ecosystem includes natural disturbances and may include carefully designed human-caused changes.

genetically modified organisms — biological organisms which have been induced by various means to consist of genetic structural changes.

high conservation value forests — forests that possess one or more of the following attributes:

- forest areas containing globally, regionally or nationally significant: concentrations of biodiversity values (e.g. endemism, endangered species, refugia); and/or large landscape level forests, contained within, or containing the management unit, where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance
- forest areas that are in or contain rare, threatened or endangered ecosystems
- forest areas that provide basic services of nature in critical situations (e.g. water supply protection, erosion control)
- forest areas fundamental to meeting basic needs of local communities (e.g. subsistence, health) and/or critical to local communities' traditional cultural identity (areas of cultural, ecological, economic or religious significance identified in cooperation with such local communities).

high-grading — removal of higher-value tree species, size classes, or age classes, without consideration for maintaining natural distributions of tree species, sizes, and ages, and without consideration for maintaining the economic value of the stand left behind. High-grading can be summarized by the phrase, 'take the best and leave the rest'. High-grading is an example of selective logging that is NOT ecologically responsible. High-grading can also apply to logging concentrated in the most gentle, easy to log terrain.

indicator — a measurement of an aspect of a criterion; a quantitative or qualitative variable which can be measured or described and which when observed periodically demonstrates trends.

indigenous lands and territories — The total environment of the lands, air, water, sea, sea-ice, flora and fauna, and other resources which indigenous peoples have traditionally owned or otherwise occupied or used. (Draft Declaration of the Rights of Indigenous Peoples: Part VI)

indigenous peoples — "The existing descendants of the peoples who inhabited the present territory of a country wholly or partially at the time when persons of a different culture or ethnic origin arrived there from other parts of the world, overcame them and, by conquest, settlement, or other means reduced them to a non-dominant or colonial situation; who today live more in conformity with their particular social, economic and cultural customs and traditions than with the institutions of the country of which they now form a part, under State structure which incorporates mainly the national, social and cultural characteristics of other segments of the population which are predominant." (Working definition adopted by the UN Working Group on Indigenous Peoples). In *SFF Standards*, the Forest Stewardship Council's use of the term "Indigenous peoples" is interpreted to refer to all First Nations of Canada.

landscape— a geographical mosaic composed of interdependent, interconnected smaller-scale ecosystems resulting from the influence of geological, topographical, soil, climatic, biotic and human interactions in a given area. For purposes of human use, landscape-level decisions are usually made for watersheds of small (less than 5,000 hectares) to moderate size (5,000 - 50,000 hectares). In regional planning processes, landscape-level considerations expand into watersheds or other areas that encompass hundreds of thousands of hectares.

landscape linkage — a protected travel route for animals and plants to cross landscapes that separate one suitable habitat from another. Landscape linkages are not "natural"; before human beings began extensive modifications of forest landscapes, animals moved freely throughout, and occupied all of the landscape. However, with human modification of forests, landscape linkages have become a necessary component of forest landscape plans in order to provide protected travel corridors through human use zones.

large landscape reserves — whole drainage basins of watersheds of about 5,000 hectares or more, maintained as genetic, species, and ecosystem reserves. In order to maintain ecosystem integrity, large landscape reserves should be large enough to accommodate the largest natural disturbance in a landscape and maintain ecosystem integrity. Large landscape reserves are NOT the same thing as whole protected watersheds. Large landscape reserves are required for landscapes of 100,000 hectares or larger, include at least 20% of the larger landscape, and are planned *in addition* to protected landscape networks. Whole protected watersheds, in contrast, are required for landscapes of 20,000 hectares or larger, are generally more than 2 000 hectares in area, and fall *within* the protected landscape network.

limited chain of custody— the chain of custody within a land area managed by a timber management enterprise and normally not including any off-site processing or manufacturing of forest products.

local laws— includes all legal norms given by organs of government whose jurisdiction is less than the national level, such as departmental, municipal and customary norms.

long term — the temporal scale of natural ecological disturbances, succession, and other changes relevant to ecologically responsible timber management and forest use. Usually long-term time scales extend from 200 years to millennia.

moderately stable ecosystem — terrain that consists of a mixture of ecologically sensitive ecosystems and stable ecosystems.

modified landscape/stand — a landscape/stand whose composition, structure, and/or functioning has been significantly altered by non-indigenous cultures**.**

native species (= indigenous species) — a species that occurs naturally in the region; endemic to the area.

natural — possessing the composition, structures, and functioning of the relevant ecosystem type before industrial modification of landscapes and their component ecosystems. For North America, SFF generally defines "natural" conditions as the period before European contact and similar modern conditions. Since First Nations used the forest and other ecosystems of North America for millennia before European contact, "natural" does NOT mean without any human use.

natural cycles — energy, nutrient, and mineral cycling as a result of interactions between soils, water, plants, and animals in forest environments that affect the ecological productivity and functioning of a given site.

natural forest — forest area(s) being managed to protect, maintain, or restore natural composition, structures, and functioning.

nontimber forest products — 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.

old growth — a successional forest phase characterized by:

- old, large trees for the site's productivity and ecosystem type
- a high density of large snags and large fallen trees for the site's productivity and ecosystem type
- multiple-layer canopies with relatively frequent canopy gaps

Old growth forests contain both the highest levels of biological diversity and the greatest diversity of specialized species. Old growth also consists of a variety of less obvious, but equally important and unique, composition, structure, and functioning, such as certain species of mycorrhizal fungi, the highest-quality water, and special soil structures. Old growth is usually the final stage of succession and will usually perpetuate itself until severe landscape-level disturbances occur.

old growth node — a stand or group of stands of reserved old growth. As a component of protected landscape networks, old growth nodes are designed to ensure the persistence of a successional forest phase that is a) a provider of specialized functions not provided by other phases, b) critically important to long-term forest functioning, c) under constant threat of excessive cutting, and d) very difficult, if not impossible, to restore.

old growth recruitment areas — a stand or group of stands reserved from logging, conversion uses, and other human uses that significantly modify forest structure, composition, and/or functioning, in order to develop as many natural old growth characteristics as possible. Old growth recruitment areas should be designated in forest areas that are in as natural a condition as possible.

other forest types — forest areas that do not fit the definitions of plantation or natural forests and which are defined more specifically by FSC-approved national and regional standards of forest stewardship.

plan — in this document, a "plan" may include any type of written plan, prescription, or other formal document specifying management intentions — for example, management plans, forest development plans, or silviculture prescriptions — or a combination thereof.

plantation — forest area(s) being managed primarily for timber and, as a result, lacking a significant amount of natural composition, structures, and functioning.

precondition of certification — a requirement that must be satisfied prior to certification being obtained.

principle — an essential rule or element; in the case of SFF and FSC, of forest stewardship.

protected landscape network — a system of reserves and otherwise protected areas designed to protect the full range of ecosystem composition, structure, and functioning found in a landscape. Protected landscape networks include protected riparian ecosystems, ecologically sensitive sites, old growth nodes, cross-valley corridors/landscape linkages, whole protected watersheds, and other reserves designed to fill gaps in representation and protection of forest composition, structures, and functioning.

protected riparian ecosystem — a riparian ecosystem that is reserved as part of a protected landscape network or a protected stand network. Very low-intensity logging with special restrictions *may* occur in some stable or moderately stable portions of protected riparian ecosystems, if justified by field assessment from a site-specific, ecosystem-based viewpoint.

protected stand network — a system of reserves or otherwise protected areas and/or reserved composition and structures designed to protect the full range of ecosystem composition, structure, and functioning found within a stand. Protected stand networks include protected riparian ecosystems, ecologically sensitive areas, old growth trees or small patches of old growth, small-scale connectivity, and other reserves designed to fill gaps in protection of forest composition, structures, and functioning.

recommendation — a statement of advised performance. Recommendations are intended to give direction to the timber management enterprise's commitment to constant improvement, which is a requirement of SFF certification.

requirement — a standard, criterion, or procedure to be fulfilled. The term "requirement" describes an action or condition that is absolutely essential to obtain or maintain certification.

restoration (of forests) — assisting the recovery of forest ecosystems from a degraded state to full functioning. A key part of this definition, from the standpoint of ecological responsibility, is its limitation of people's role in most cases to *assisting*, rather than *fixing*, natural processes. Usually the least risky approach is to respect and emulate those natural processes that reestablish the composition

and structures and develop the biological diversity necessary for the return or improvement of forest functioning that has been lost or degraded. In some cases, restoration will require more radical intervention by humans.

riparian ecosystem — consists of the riparian zone and the riparian zone of influence. The riparian zone is relatively wet forest found immediately adjacent to creeks, rivers, lakes, ponds, and wetlands. The riparian zone is recognized by composition, structures, and functioning that depend on the site's relatively abundant moisture and so are generally absent from the drier surrounding forest types. The riparian zone of influence is the drier upland forest, immediately adjacent to the riparian zone, whose composition, structures, and functioning are directly dependent on the microclimatic and other influences of the watercourse or water body. In turn, the riparian zone of influence plays active roles in maintaining the riparian zone, for example filtering water and modifying the microclimate. These upland areas are important buffers that protect riparian zone functioning and also provide drier, more open habitat that is used as a movement corridor by upland species. Riparian ecosystems are one of the most common, sensitive, and important types of landscape connectors.

riparian zone — relatively wet forest found immediately adjacent to creeks, rivers, lakes, and wetlands. The riparian zone is recognized by composition, structures, and functioning that depend on the site's relatively abundant moisture and so are generally absent from the drier surrounding forest types.

riparian zone of influence — the drier upland forest, immediately adjacent to the riparian zone, whose composition, structures, and functioning are directly dependent on the microclimatic and other influences of the watercourse or water body. These upland areas are important buffers that protect riparian zone functioning and also provide drier, more open habitat that is used as a movement corridor by upland species. In turn, the riparian zone of influence plays active roles in maintaining the riparian zone, for example filtering water and modifying the microclimate.

salvage — timber cutting carried out as a direct response to perceived threats to timber values and tree health due to any of a variety of disturbance agents. Salvage aims to utilize dead, dying, or decaying trees before their timber value is lost.

silviculture — producing and tending a forest by manipulating its establishment, composition and growth to best fulfill the objectives of the owner. This may, or may not, include timber production.

snags — standing dead trees.

soil disturbance — any short-term or long-term alteration of soil structures, composition, or functioning. Soil disturbance includes forest floor displacement, soil displacement, soil compaction, mass wasting, and surface soil erosion.

soft (forest) uses — human uses of the forest that do not significantly alter forest composition, structures, or functioning at either the landscape or the stand level. Examples of soft forest uses may be First Nations subsistence and cultural protection, backcountry recreation, and human water supply.

stable ecosystem — an ecosystem that has not been designated as ecologically sensitive. That is, an ecosystem that does not include steep slope gradients, broken slopes, high elevation forests, snow-dominated forests, very dry or very wet sites, shallow soils, or other indicators of ecological limits.

stand — a forest area where the condition, composition, structure, and ecological functioning are sufficiently uniform to distinguish the area from adjacent forest areas. Stands generally form a basic management unit where an ecologically responsible forest use prescription can be applied uniformly.

standards — documented agreements containing technical specifications or other precise criteria to be used consistently as rules, guidelines, or definitions of characteristics, to ensure that materials, products, processes and services are fit for their purpose [Upton and Bass]. Standards may include criteria, indicators, and recommendations.

SMALL HOLDER evaluation — evaluation by SFF to determine whether timber is grown and managed according to SFF standards for ecologically responsible timber management. SMALL HOLDER evaluation is applied to lands that do not meet the provisions for WHOLE FOREST evaluation. SMALL HOLDER applicants need not comply with most landscape-level standards, nor with any standards designated as "WHOLE FOREST only". Landscape-level standards for SMALL HOLDERS consist only of a general analysis and accommodation of successional patterns, as well as evidence that the applicant is actively involved in promoting landscape-level planning and management in the local community These standards are marked "SMALL HOLDER only".

SFF may decide to grant SMALL HOLDER evaluation to a large-area timber management enterprise on the condition that a clear plan is in place to develop and to implement ecologically responsible landscape-level timber management that will in future be evaluated as a WHOLE FOREST. Maintenance of certification would then depend upon faithful implementation of the landscape-level plan. *There is no difference in the certification status of timber management enterprises that have been evaluated and certified at the SMALL-HOLDER and WHOLE FOREST levels.*

structures (of a forest ecosystem) — the arrangements of the elements or parts of an ecosystem. Forest structures include the size, shape, condition, and position of parts (for example, large old trees, standing dead trees, or fallen trees); the arrangement and depth of soil organic layers; and the pattern of forest ecosystem types across large forest landscapes.

succession — a series of dynamic changes in ecosystem composition, structure, and function over time as a result of which one group of organisms succeeds another through stages following disturbance.

tenure — Socially defined agreements held by individuals or groups, recognized by legal statutes or customary practice, regarding the "bundle of rights and duties" of ownership, holding, access and/or usage of a particular land unit or the associated

resources there within (such as individual trees, plant species, water, minerals, etc.).

threatened species — Any species which is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

timber management enterprise — an organization engaged in timber management**.**

unmodified landscape/stand —a landscape/stand whose composition, structure, and/or functioning are within their natural ranges of variability.

use rights — rights for the use of forest resources that can be defined by local custom, mutual agreements, or prescribed by other entities holding access rights. These rights may restrict the use of particular resources to specific levels of consumption or particular harvesting techniques.

WHOLE FOREST evaluation—evaluation by SFF to determine whether timber is grown and managed according to SFF standards for ecologically responsible timber management. WHOLE FOREST evaluation is applied where the applicant has decision-making control over the landscape or part of the landscape (at least 1000 hectares) and has decision-making control over the forest stands that make up the landscape in question. Whole forest evaluation applies all SFF certification standards.

Whole forest evaluation may be applied either to the entire holdings of an ownership or to an entire landscape or watershed that constitutes only a portion of an ownership's contiguous holdings. If the certifier determines that lands of 1000 hectares or more do not include a landscape unit sufficiently discrete, diverse, contiguous, or otherwise suitable for application of landscape-level standards, management may be evaluated at the SMALL HOLDER level.
There is no difference in the certification status of timber management enterprises that have been evaluated and certified at the SMALL-HOLDER and WHOLE FOREST levels.

whole protected watershed — the whole drainage basin of a watershed of about 2,000 hectares or more, maintained as a genetic, species, and ecosystem reserve in forest landscapes. Whole protected watersheds are NOT the same thing as large landscape reserves. Whole protected watersheds are required for landscapes of 20,000 hectares or larger, are smaller than large landscape reserves, and fall *within* the protected landscape network. Large landscape reserves are required for landscapes of 100,000 hectares or larger, include at least 20% of the landscape, and are planned *in addition* to protected landscape networks.

whole tree harvesting — a logging system that removes the trunk and all of the tree top, including branches, from where the tree was felled. The branches and top are cut off (bucked) at a central landing, where they are usually burned or buried.

wildcrafting — harvesting and processing of non-timber forest products, such as berries, mushrooms, and medicinal herbs