

REVISED FINAL
PACIFIC COAST (USA)
REGIONAL FOREST STEWARDSHIP STANDARD

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INTRODUCTION

Purpose of these standards

Forest Stewardship Council (FSC) forest and forest-products certification is a voluntary, market-driven process through which forest managers can gain recognition for ecologically, socially, and economically exemplary forestry. In return for proven excellence in forest management, markets and consumers provide enhanced market share, market stability, and/or market premiums to certified forest managers and processors. In this way, the consuming public voluntarily pays forest owners, forest managers, and forest-products processors for carrying out excellent forest conservation practices.

The FSC's Principles and Criteria for Forest Management provide broad, internationally applicable standards for certification. In addition to the Principles and Criteria, the FSC intends evaluations by FSC-accredited certifiers to be based on regionally specific indicators and verifiers. This document contains detailed provisions for the Pacific Coast region of the U.S., which is generally defined as the states of Washington, Oregon, and California. Landowners and managers who own forests near the boundaries of these states or in multiple regions should contact the FSC-US and FSC-accredited certifiers to determine the applicability of these and other regional standards.

The Pacific Coast region is distinguished by having the most commercially productive forests in the US, as well as some of the nation's most highly valued scenic and biological resources. The region's coastal coniferous forests grow taller and larger diameter trees than dominant-tree species in the eastern U.S., and consequently often have a very high economic value. High economic value (e.g., in coastal redwood and Douglas fir forests) and high ecological values coincide in the Pacific Coast region (e.g., in the Klamath-Siskiyou ecoregion) and often lead to clashes between environmental and economic interests. These standards were developed as a means to protect core environmental values, while simultaneously respecting the economic importance of forest products to the region's forest-based communities, and the social values of a healthy ecosystem and regional economy.

In contrast to other regions of the U.S., significant remnants of primary old-growth redwood and fir forests remain standing, both as reserves and as managed forests. These standards are intended to protect the irreplaceable values of old-growth forests in the region, while respecting the autonomy of American Indians to manage their tribal lands according to their traditional authority. Large, relatively connected landscapes now occur in the Pacific Coast region much less frequently than under historical conditions. The remaining relatively intact forests play a critical role in maintaining ecosystem processes, such as refugia for fish (especially salmonids) and wildlife, maintaining the integrity of landscapes, and providing habitat for those species that are vulnerable to the human disturbances that now dominate the region's landscapes. Thus, remaining intact forests larger than 500 acres should be given special consideration in management decisions, considering their unique role in the maintenance of ecological integrity at the landscape and watershed scales. Management activities in such areas should not degrade the quality or integrity of such roadless landscapes.

The Pacific Coast region is also distinguished by a high diversity of forest types, due to its latitudinal range (~ 30° N - 50° N), its altitude range (sea level to 1500 m or higher), and because of marked differences in coastal and inland biophysical conditions. This standard was written with flexibility in order to be useful under the wide range of conditions across the region.

The Pacific Coast regional standard requires forest owners and managers to maintain and/or restore: forest structures, functions, and processes; biodiversity at all levels; and natural soil and hydrological characteristics at both stand and landscape levels. Management and protection of old-growth stands is an important issue in the region.

Guidance for Certifiers

The regional standard provides guidance to certifiers on how to apply FSC criteria in the region. Where possible, specific provisions have been developed. In other aspects of management, geographic, biological, and edaphic variability within the region permit only general and flexible provisions. On these issues, certifiers are expected to exercise discretion, which, properly applied, will help encourage excellent, yet viable, forest management practices.

The Pacific Coast Regional Certification Standard has been written to conform to (and to avoid re-stating) the FSC's Principles and Criteria (P&C) and the FSC-U.S. National Indicators. Concepts and requirements expressed in the FSC Principles and Criteria are included in the proposed standard for the Pacific Coast Region of the United States. Those Criteria are considered an applicable standard, and during an assessment, FSC accredited certification bodies are expected to evaluate the degree to which each Criterion is met in the same manner as they evaluate the regional indicators. In some instances, regional indicators have been added that apply specifically to the Pacific Coast region. Where no indicators are provided, the relevant criterion is considered to be sufficiently specific to be directly assessed in the field.

Consistent with the standard, certifiers are expected to evaluate whether forest owners and managers met or exceeded all state and local laws.

Applicability to scale and intensity

The standard is intended to be scale sensitive in that some requirements dealing with particular biophysical characteristics are stricter for owners of large forests than they are for landowners with smaller holdings. The Working Group recognized that small forests require a less-intensive level of data collection and maintenance, less professional staffing, and less financial investment than large forests. The FSC-US has defined small forests as those under 5,000 acres, mid-sized forests as those from 5,000 to 50,000 acres, and large forest as those over 50,000 acres.

Major Failure (Fatal Flaws)

Failure to meet the provisions of section 6.3.d. or 10.5.b. will be considered a major failure. Failure to meet the provisions of 6.4.c. or 6.4.d. is a major failure for mid-sized and large public forests. Provisions deemed major failures require full compliance before a certificate can be issued.

In the context of the United States Pacific Coast Standard, failure at the level of any one particular criterion does not preclude a positive certification decision

Applicability to federal and other public lands

The FSC-US Board recognizes that additional indicators of performance may be required on federally managed public lands because of their particular public mandates..

If publicly owned lands are to be certified, the standard must be modified to take into account the public trust values associated with the ownership. In all public lands assessments, a wide range of local and regional stakeholders must be consulted during the assessment process, to assure that state and local conditions are well addressed. Specifically, certification of state and local public lands bears special responsibilities to: (1) include public input into planning and management decisions and (2) address local community well-being, and 3) address conservation and restoration issues at the stand, forest, and landscape, and ecosystem levels.

For information on the certification of federal lands and the applicability of these standards in that context see FSC-US federal lands certification policy at www.fscus.org.

How this regional standard was developed

The process for developing this standard was initiated by the regional members of the FSC and by the FSC - US Initiative in October 1995. The Working Group is comprised of FSC members from Washington, Oregon, and California who represent a broad spectrum of economic, social, and environmental interests. The Pacific Forest Trust was selected by regional FSC members to coordinate and facilitate initial standards development. In December 1998, Working Group facilitation and coordination was transferred to Nick Brown, who worked for four months under contract to the FSC-US Initiative, and is currently Manager for Forest Conservation for World Wildlife Fund - US.

In contrast to other regional working groups in the U.S., Pacific Coast Working Group members agreed to limit working group membership to FSC members. The decision is justified by a robust level of FSC activity in the region, including the presence of regional and headquarters offices of certifiers; large, mid-sized and small certified forests; regional and national offices of FSC member ENGOs; and certified chain-of-custody businesses. Over thirty FSC members are based in the region, and FSC members

constitute a broad majority of regional FSC supporters in each of the FSC chambers. Public review periods and direct communications with state agencies and non-member forest management companies have provided significant opportunities for input by non-members of FSC.

Over the past six and a half years, more than a dozen full working group meetings and several subcommittee meetings have been held in San Francisco, Oakland, Sacramento, Eureka, and Arcata, California; Portland, Oregon; and Olympia, Washington.

Development of the standard began with a review of the FSC's Principles and Criteria, existing local standards in the region, and other standards developed by FSC-accredited certifiers. The Working Group also consulted with regional experts and collected regulations relevant to forestry in the three states. The standard has gone through several major revisions over the course of the six years. Comments on drafts of the standards have been sought from over 400 groups and individuals who have a diversity of interests in forestry, forest management, and forest ecology. More than 100 of these stakeholders have actively participated in the shaping of this document. Some of the participants listed above are not current Working Group members.

The Pacific Coast Working Group completed a final revision of its Standard on June 5, 2002. A formal approving mechanism (vote or consensus) was not employed because the PCWG did not complete its input until after the U.S. Standards Committee was made responsible for the finalization of the standard (June 1 deadline, postponed to June 15) per FSC-U.S. Board resolution. However, no member of the PCWG voiced opposition to the standard at the time it went forward to the Standards Committee. Several participants listed above were not active as near-final and final drafts were prepared, and they may not agree with the content of this standard. Listing as a participant does not necessarily imply concurrence with the submission draft.

Once the public comments and field test results were considered, a draft of the Pacific Coast Standard was approved unanimously by the U.S. Standards Committee at a meeting in Burlington, VT, on July 17, 2002. The FSC-US board voted to submit this draft to FSC on August 12, 2002.

Document structure

In this document, the FSC-developed **Principles and Criteria** are shown in **bold** type. Regionally developed provisions follow in regular font and provide specific detail that describes how the FSC Principles and Criteria are intended to be interpreted in the region. *Verifiers* indicate how compliance with an indicator can be determined, but are not in and of themselves requirements. *Verifiers* are indented and *italicized*

Example:

Principle 1.: FSC approved Principle (globally applicable)

Criterion 1.1.: FSC approved Criterion (globally applicable)

- a. regional indicator (applicable to the Pacific Coast region)
- b. regional indicator (applicable to the Pacific Coast region)

regional verifier (For example,...)

“Applicability Notes” and “Notes” are provided to clarify the context and applicability of criteria and indicators to forestry in the region.

A glossary of terms is provided, which includes some terms that were written by FSC (international and national) committees, and some that were written by the Pacific Coast Working Group. Appendices reference the following: (1) relevant treaties, laws, and policies; (2) existing certification standards; (3) sources of information on Native American land tenure and archeological sites; (4) sources of information on old-growth definitions; and (5) an illustrative monitoring framework.

Pacific Coast Working Group continuing processes

The Pacific Coast Working Group (PCWG) will maintain its structure after submission of these standards to the FSC-US Working Group, to oversee a 5-year process of testing and evaluation of the regional standard. This follow-up is intended to accomplish the following:

- a) Identify issues of continued concern to PCWG members and attempt to resolve them through peer review and other methods.
- b) Test the adequacy of the standard for use in different geographical areas of our region;
- c) Increase representation of social stakeholders, grassroots environmental groups, and members from Washington and Oregon who have been under-represented in the PCWG to date;

To carry out these objectives the PCWG should:

- a) seek a mutually agreeable institution that can serve as a Working Group coordinator and facilitator;
- b) ask FSC-US to help secure an institutional “home,” with secure funding for the PCWG facilitator in order to carry out this follow-up process;
- c) form subcommittees, as needed, to identify concerns and make recommendations to resolve them;
- d) meet at least yearly to evaluate progress and make decisions regarding process and wording for revisions to the standard;
- e) as needed, establish appropriate forums for communication, including facilitated email discussion groups.

Harmonization of the PC with other regions and countries

The Pacific Coast standard was developed in accordance and compliance with the FSC-US National Indicators, which provides a common minimum requirement for all provisions of FSC standards in the U.S.

Representatives of the British Columbia Standards Committee met with the PCWG in July 01, to discuss points of harmonization. In March 02, the coordinators of the BC Standards Committee and the PCWG signed a memorandum of understanding that commits the two groups to continue carrying out communications and harmonization efforts.

The FSC-US Standards Committee referenced the Rocky Mountain standard when it reviewed the Pacific Coast standard, to assure that differences in the standards are justifiable on the basis of ecological and cultural differences between the two regions.

Outreach efforts

Thirty-four organizations and forestry leaders have participated in the development of this standard, and over 400 stakeholders have provided input to its content. From February until May '02, the draft standard was posted on websites, and formal public input was solicited. Stakeholders from all sectors—loggers, foresters, landowners, mill operators, environmental activists, ecologists, moderate ENGOs, community and social leaders, and certifiers—commented on drafts as the standard was being developed. Comments were considered in the final draft of the standard.

Public Comments

Analysis of the comments submitted during the formal comment period shows comments were received from 6 different economic chamber representatives, 10 different environmental chamber representatives and 4 different individual commenters. Of the 215 comments received, 30 were submitted supporting various provisions, 48 were opposed and 86 comments suggested refinements to the PCWG indicators. The provisions with the most comments included the two versions of principle 10 (plantations), 6.5, streams and watercourses and 6.3.a, forest regeneration and succession.

Field Testing

Principle 10 of the standard was field tested at Port Blakely Tree Farms in western Washington State on April 18, 2002 and Principles 1-9 were field tested at Mendocino Redwood Company in northern California on May 5-8 2002. SCS, SmartWood, and other consultants were engaged to conduct the field test, with the working group coordinator and FSC representatives as observers. Field test results were considered in the final draft of the standard.

Social Issues

Social equity, community involvement and participation, and incorporation of social concerns and interests into the regional standards are critically important to the long-term success of these standards. The Pacific Coast Working Group (PCWG) therefore proposes development of a targeted outreach process to social stakeholders in the region. Outreach will be based on the following objectives:

- a) to test the adequacy of the social components of the existing standard;
- b) to identify gaps in the social aspects of the standard;
- c) to propose wording for the revision of this standard based on conclusions from “a” and “b” above;
- d) to identify barriers to social representation in the PCWG and make recommendations to overcome them.

In order to carry out these objectives, the outreach should:

- a) identify social stakeholders in the region, such as tribal groups, workers, community forestry enterprises, non-timber forest product workers, and small landholders;
- b) develop an appropriate methodology or methodologies, subject to approval by the PCWG, to accomplish the stated objectives;
- c) identify social NGO(s) and/or researchers, who are respected in the region, to help design and implement this outreach and to make specific recommendations to the PCWG regarding revisions to the existing social provisions; and
- d) ask FSC-US for funding to implement this outreach.

Periodic Review Process

The FSC-US Board will periodically review this standard during the accreditation period. At a minimum a comprehensive review will be conducted no later than 6 months prior to the expiration of the endorsement period (e.g. no later than February 26, 2008). During the review period the FSC-US Board will solicit feedback from Working Group members, certificate holders, certifying bodies, FSC members, interested individuals and the general public. Information from scoping will be reviewed by the FSC-US Board and incorporated into the standard as needed.

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Applicability Note to Regional Standard regarding certification of federal lands. The process for certifying federal lands must comply with the FSC-US Board approved Federal Lands Policy and Federal Lands Findings, both of which are available at www.fscus.org. Certifiers should consult the Federal lands policy and findings to determine whether there are FSC-US approved indicators specific to the type of federal property being assessed, which must be used in addition to these regional standards.

PRINCIPLE 1. COMPLIANCE WITH LAWS AND FSC PRINCIPLES

Forest management shall respect all applicable laws of the country in which they occur, and international treaties and agreements to which the country is a signatory, and comply with all FSC Principles and Criteria.

1.1. Forest management shall respect all national and local laws and administrative requirements.

1.1.a. The applicant's forest management plans and operations in the region demonstrate compliance with federal, state, county, municipal, and tribal laws, as well as case law and regulations.

For example: Records are on file documenting any instances of violations (whether actual or purported) of any applicable laws and regulations as listed above, including actions that were taken by the forest owner or manager to address these violations.

1.1.b. Forestry operations meet or exceed the current state forest-practice regulations, best management practices for forestry, roads, wildlife, and/or water quality that exist within the state(s) or other appropriate jurisdiction(s) in which the operations occur.

1.1.c. Where required by law, forest (*see Glossary*) owners and managers share public information, provide open records, and conduct procedures for public participation.

1.2. All applicable and legally prescribed fees, royalties, taxes and other charges shall be paid.

1.2.a. Taxes on forestland and timber, and other fees related to forest management, are paid in a timely manner and in accordance with federal, state, county, municipal, and tribal laws.

1.3. In signatory countries, the provisions of all binding international agreements such as CITES, ILO Conventions, ITTA, and Convention on Biological Diversity, shall be respected.

1.3.a. Forest owners or managers comply with treaties, including those with American Indian tribes, and other international agreements that have been signed by the President of the United States, ratified by the Senate and have entered into force. (Note: see Analysis of US Government Procedures for Abiding with Treaties, FSC-US, 3/10/03).

1.4. Conflicts between laws, regulations and the FSC Principles and Criteria shall be evaluated for the purposes of certification, on a case by case basis, by the certifiers and the involved or affected parties.

1.4.a Any perceived, possible conflict between US law and FSC P&C shall be referred to FSC ABU.

1.5. Forest management areas should be protected from illegal harvesting, settlement and other unauthorized activities.

1.5.a. Forest owners or managers implement measures to prevent illegal and unauthorized activities in the forest.

For example, efforts may include posting boundary notices, using gates, making periodic inspections, and reporting suspected illegal or unauthorized activities to the proper authorities.

1.6. Forest managers shall demonstrate a long-term commitment to adhere to the FSC Principles and Criteria.

Note: The Working Group considers this criterion sufficiently explicit and measurable. Indicators are not required.

Applicability note to Criterion 1.6.: Assessment of this criterion is guided by both FSC Policy and Guidelines: Partial Certification for Large Ownerships (BM19.24, May 2000 available at http://www.fsc.org/en/whats_new/documents/Docs_cent/2 and the FSC Guidelines for Certification Bodies FSC STD 20-001 (version 2.1).

1.6.a. Forest owners or managers provide written statements of commitment to the FSC Principles and Criteria. The commitment is stated in the management plan [see 7.1], a document prepared for the certification process, or another official document.

1.6.b Forest owners or managers document the reasons for seeking partial certification.

1.6.c Forest owners or managers document strategies and silvicultural treatments for several harvest entries that meet the FSC Principles and Criteria (see Principle 7)

PRINCIPLE 2. TENURE AND USE RIGHTS AND RESPONSIBILITIES
Long-term tenure and use rights to the land and forest resources shall be clearly defined, documented and legally established.

2.1. Clear evidence of long-term forest use rights to the land (e.g. land title, customary rights, or lease agreements) shall be demonstrated.

2.1.a. Forest owners or managers make available information on legal and customary rights associated with the forest. These rights include both those held by the party seeking certification and those held by other parties.

For example, tribal claims to customary uses, non-timber forest products (NTFPs), such as firewood and botanical products, hunting and fishing, and recreational uses, are addressed.

2.1.b. Land boundaries are clearly identified on the ground by the forest owner or manager prior to commencement of management activities adjacent to the boundary.

2.2. Local communities with legal or customary tenure or use rights shall maintain control, to the extent necessary to protect their rights or resources, over forest operations unless they delegate control with free and informed consent to other agencies.

2.2.a. Forest owners or managers allow lawful customary uses of the forest to the extent they are consistent with the conservation of forest resources and the stated objectives in the management plan, and do not present a legal liability.

Examples of legally recognized rights include:

- *public rights of way*
- *public use of water*
- *established easements*
- *treaty rights*

2.2.b. The forest owner or manager allows customary and lawful uses of the forest to the extent they are consistent with conservation of the forest resource, forest management objectives, and do not present a legal liability.

For example:

- *collecting firewood for personal use or sale*
- *collecting non-timber forest products for personal use or sale*
- *recreation*
- *gathering plant materials for traditional cultural purposes by American Indians*
- *use of water*
- *hiking, hunting, and fishing on non-posted property*
- *visiting ancestral gravesites*

2.2.c. On ownerships where customary use rights and traditional and cultural areas/sites exist, forest owners or managers consult with stakeholders in the planning and implementation of forest management activities.

2.3. Appropriate mechanisms shall be employed to resolve disputes over tenure claims and use rights. The circumstances and status of any outstanding disputes will be explicitly considered in the certification evaluation. Disputes of substantial magnitude involving a significant number of interests will normally disqualify an operation from being certified.

2.3.a. The forest owner or manager maintains relations with community stakeholders and/or American Indian groups to identify disputes in their early stages. If disputes arise,

the forest owner or manager initially attempts to resolve them through open communication, negotiation, and/or mediation. If negotiation fails, federal, state, local, and/or tribal laws are employed to resolve land tenure (*see Glossary*) claims.

2.3.b. The forest owner or manager provides information regarding disputes over tenure and use rights to the certifying body.

PRINCIPLE 3. INDIGENOUS PEOPLES' RIGHTS

The legal and customary rights of indigenous peoples to own, use and manage their lands, territories, and resources shall be recognized and respected.

Applicability Note: The terms "tribes", "tribal" or "American Indian groups" in indicators under Principle 3, include all indigenous people in the US; groups or individuals who may be organized in recognized or unrecognized tribes, bands, nations, native corporations, rancherias (see Glossary), or other native groups.

3.1. Indigenous peoples shall control forest management on their lands and territories unless they delegate control with free and informed consent to other agencies.

3.1.a. Managers of tribal forests secure informed consent regarding forest management activities from tribes or individuals (such as allottees (*see Glossary*)) whose forest is being considered for management.

3.1.b. When requested to do so by the tribal landowner, forest owners or managers use tribal experience, knowledge, practices, and insights in forest management planning and operations on tribal lands.

3.1.c. Areas of restricted access are delineated with the consent of affected tribal people and in accordance with their laws and customs on legally recognized tribal lands and/or customarily used non-tribal.

3.2. Forest management shall not threaten or diminish, either directly or indirectly, the resources or tenure rights of indigenous peoples.

3.2.a. Forest owners or managers identify and contact American Indian groups that have current legal or customary rights to use the management area. (*See Appendix C for sources of information on indigenous land tenure.*)

The recommended priority for tribal contacts is:

- 1) Tribal government, such as tribal chairpersons of federally recognized tribes and traditional cultural and religious leaders.
- 2) Tribal contact persons identified by tribal governments.
- 3) Representatives of non-recognized tribes or tribal groups with no formal governments.
- 4) Lineal descendants of American Indians with ties to the land.

Unsuccessful attempts to contact tribal representatives are documented.

3.2.b. Forest owners or managers invite the participation of tribal representatives in jointly planning forestry operations that affect tribal and other American Indian resources.

3.2.c. On lands adjacent to tribal lands, and on other lands where operations might affect tribal lands or resources, steps are taken by the forest owner or manager to ensure that tribal resources are protected from adverse effects of management activities.

3.3. Sites of special cultural, ecological, economic or religious significance to indigenous peoples shall be clearly identified in cooperation with such peoples, and recognized and protected by forest managers.

3.3.a. Forest owners or managers request the participation of tribal representatives in identifying sites of current or traditional significance within the property proposed for certification.

For example, areas of special significance may include:
ceremonial, burial, or village sites
areas used for hunting, fishing, or trapping
current areas used for gathering culturally important or ceremonial materials, such as basket materials, medicinal plants, or plant materials used in dances
current areas used for subsistence gathering, such as mushrooms, berries, or acorns

3.3.b. Forest owners or managers and tribal representatives jointly develop measures to protect or enhance areas of special significance.

3.3.c. Confidentiality of disclosures is maintained in keeping with applicable laws and requirements of tribal representatives.

3.4. Indigenous peoples shall be compensated for the application of their traditional knowledge regarding the use of forest species or management systems in forest operations. This compensation shall be formally agreed upon with their free and informed consent before forest operations commence.

3.4.a. Forest owners or managers respect the confidentiality of tribal knowledge and assist in the protection of tribal intellectual property rights.

3.4.b. A written agreement is reached with individual American Indians and/or tribes prior to commercialization of their indigenous intellectual property, traditional ecological knowledge, and/or forest resources. The individuals and/or tribes are fairly compensated when such commercialization takes place.

PRINCIPLE 4. COMMUNITY RELATIONS AND WORKERS' RIGHTS
Forest management operations shall maintain or enhance the long-term social and economic well being of forest workers and local communities.

4.1. The communities within, or adjacent to, the forest management area should be given opportunities for employment, training, and other services.

4.1.a. Forest work is packaged and offered in ways that create a high-quality work environment for employees, contractors, and their employees.

For example, a high quality work environment may include the following attributes:

- *employee and contractor relationships that are long term and stable*
- *a mixture of diverse tasks that require varying levels of skill*
- *opportunities for advancement*
- *a comprehensive package of benefits*
- *opportunities for employee and contractor participation in decision-making*
- *forest owners or managers provide and/or support training opportunities for workers to improve their skills*

4.1.b. The conditions of employment are as good for non-local workers as they are for local workers doing the same job (e.g., remuneration, benefits, safety equipment, training, and workman's compensation).

4.1.c. Employee compensation and hiring practices meet or exceed standards for comparable forest workers within the region.

4.1.d. Forest owners or managers use qualified local foresters, loggers, and contractors. Forest managers and their contractors give preference to qualified local workers.

4.1.e. Forest owners or managers demonstrate a preference for the local procurement of goods and services.

4.1.f. Forest owners or managers and their contractors comply with the letter and intent of applicable state and federal labor laws and regulations (*see also 1.1.a*).

4.1.g. Forest owners and managers contribute to public education about forest ecosystems and their management.

For example, forest managers use forests as a training and educational resource.

4.2. Forest management should meet or exceed all applicable laws and/or regulations covering health and safety of employees and their families.

4.2.a. The forest owner or manager and their contractors develop and implement safety programs and procedures.

For example:

- *well-maintained machinery and equipment*
- *use of safety equipment appropriate to each task*
- *documentation and posting of safety procedures in the workplace*
- *educational efforts (such as Forest Industry Safety Training Alliance and Game of Logging)*
- *contracts with safety requirements*
- *safety records, training reports, and certificates*

4.3. The rights of workers to organize and voluntarily negotiate with their employers shall be guaranteed as outlined in Conventions 87 and 98 of the International Labor Organization (ILO).

Applicability Note: Compliance with this criterion can be accomplished with guidance from: FSC Certification and the ILO Conventions, FSC Policy Paper and Guidelines, 20 May 2002.

4.3.a. Forest owners or managers and their contractors develop effective mechanisms to resolve disputes between workers and management.

For example:

- *Language translators and cultural interpreters are employed as needed.*
- *Cross-cultural training is employed as needed to integrate the workforce.*

4.4. Management planning and operations shall incorporate the results of evaluations of social impact. Consultations shall be maintained with people and groups directly affected by management operations.

Applicability Note: People and groups directly affected by management operations may include: employees and contractors of the landowner; neighbors; fishers and hunters, as well as other recreational users; local water users; processors of forest products; and representatives of local and regional organizations concerned with social impacts.

4.4.a. Forest owners or managers of large-scale operations provide opportunities for people, as individuals and/or groups, to offer input into management planning when they are affected by forestry operations.

4.4.b. People and groups affected by management operations are apprised of proposed forestry activities (e.g., logging, burning, spraying, and traffic) and associated environmental and aesthetic effects in order to solicit their comments or concerns. Such concerns are documented and addressed in management plans and operations.

4.4.c. Significant archeological sites and sites of cultural, historical, or community significance, as identified through consultation with state archeological offices, tribes, universities, and local expertise, are designated as special management zones or otherwise protected during harvest operations.

4.5. Appropriate mechanisms shall be employed for resolving grievances and for providing fair compensation in the case of loss or damage affecting the legal or customary rights, property, resources, or livelihoods of local peoples. Measures shall be taken to avoid such loss or damage.

4.5.a. The forest owner or manager attempts to resolve grievances and mitigate damage resulting from forest management activities through open communication and negotiation prior to legal action.

4.5.b. Forest owners or managers and their contractors have adequate liability insurance.

PRINCIPLE 5. BENEFITS FROM THE FOREST

Forest management operations shall encourage the efficient use of the forest's multiple products and services to ensure economic viability and a wide range of environmental and social benefits.

5.1. Forest management should strive toward economic viability, while taking into account the full environmental, social, and operational costs of production, and ensuring the investments necessary to maintain the ecological productivity of the forest.

5.1.a. The forest owner or manager is financially able to support long-term (i.e., decades rather than quarter-years or years) forest management (and if necessary restoration), such as planning, inventory, resource protection, and post-harvest management activities.

For example, investment and reinvestment in forest management are sufficient to fulfill management objectives and maintain and/or restore forest health and productivity.

5.1.b. Responses (e.g., increases in harvests or debt load) to short-term financial factors, such as fluctuations in the market, requirements for immediate cash flow, need for sawmill equipment and log supplies, are limited to levels that enable fulfillment of the management plan.

5.2. Forest management and marketing operations should encourage the optimal use and local processing of the forest's diversity of products.

Applicability note: Optimal use is a balance of activities that allows the continual use of resources, while maintaining the ecological, social, and economic potentials of the system from which these resources are drawn.

5.2.a. Preference is given to local, financially competitive, value-added processing and manufacturing facilities.

5.2.b. New markets are explored and developed for common, but less-used, species (e.g., alder, tanoak, and madrone), grades of lumber, and/or an expanded diversity of forest products (e.g., small diameter logs, flooring).

5.2.c. The technical and financial specifications of some sales of forest products are scaled to promote successful competition by small businesses.

5.2.d. When non-timber products are harvested or utilized, the management and use of those products are incorporated into the management strategy.

5.3. Forest management should minimize waste associated with harvesting and on-site processing operations and avoid damage to other forest resources.

5.3.a. Felling, skidding/yarding, bucking, sorting, and handling are carried out in a way that maximizes volume and value.

5.3.b. Harvest is implemented in a way that conserves the integrity of the residual stand. Provisions concerning acceptable levels of residual damage are included in operational contracts.

For example, bumper trees are used and equipment is selected and used in a way that minimizes unintentional damage to crop trees.

5.3.c. Tree limbs, tops, snags, down logs, and other biomass are retained on site in adequate quantities and quality for ecosystem function, wildlife habitat, and future forest productivity. After adequate woody debris has been left on site to provide nutrient cycling and habitat, additional byproducts of harvest and in-the-field milling operations are considered for use in other productive processes.

For example:

- *Chips and sawdust are used for mulch, filler, or fuel.*
- *Small diameter boles are used for fence posts, flooring, and furniture stock.*

5.4. Forest management should strive to strengthen and diversify the local economy, avoiding dependence on a single forest product.

5.4.a. Forest uses and products are diversified through management, while maintaining forest composition, structures, and functions.

For example, compatible uses may include recreation, ecotourism, hunting, fishing, and specialty products.

5.4.b. The forest owner or manager reinvests in the local economy and the community through both active civic engagement and ongoing capital investment.

For example:

- *Facilities and equipment are regularly maintained and updated.*
- *Absentee owners maintain a local office.*
- *The owner or manager supports local business development by working with organizations, such as the chamber of commerce.*

5.5. Forest management operations shall recognize, maintain, and, where appropriate, enhance the value of forest services and resources such as watersheds and fisheries.

Note: The Working Group considers this criterion sufficiently explicit and measurable. Indicators are not required.

5.6. The rate of harvest of forest products shall not exceed levels that can be permanently sustained.

5.6.a. The level of sustainable harvest is based on clearly documented projections that use growth and regeneration data, site index models, and the classification of soils. The level of documentation is determined by the scale and intensity of the operation. (*see also 7.1.d*)

5.6.b. Growth rates equal or exceed average harvest rates over rolling periods of no more than 10 years. In cases where owners or managers harvest timber at intervals longer than ten years, the allowable harvest is determined by the target stocking levels and the volume of re-growth since the previous harvest.

5.6.c. The rate and methods of harvest lead to well-stocked stands across the forest management unit (FMU). Under-stocked and over-stocked stands are returned to fully stocked levels at the earliest practicable time.

PRINCIPLE 6. ENVIRONMENTAL IMPACT

Forest management shall conserve biological diversity and its associated values, water resources, soils, and unique and fragile ecosystems and landscapes, and, by so doing, maintain the ecological functions and the integrity of the forest.

6.1. Assessment of environmental impacts shall be completed -- appropriate to the scale, intensity of forest management and the uniqueness of the affected resources -- and adequately integrated into management systems. Assessments shall include landscape level considerations as well as the impacts of on-site processing facilities. Environmental impacts shall be assessed prior to commencement of site-disturbing operations.

Applicability Note: Small landowners that practice low-intensity forestry may meet this requirement with brief, less rigorous assessments. More extensive and detailed assessments (e.g., formal assessments by experts) are expected from large landowners and/or those who practice more intensive forestry (see Glossary) management.

6.1.a. Using available science and local expertise, forest owners and managers identify and describe: (1) ecological processes, such as disturbance regimes; (2) common plants, animals, and their habitats; (3) rare plant community types (*see Glossary and Appendix D*); (4) rare species and their habitats (*see Glossary*); (5) water resources; and (6) soil resources (*see also 7.1.a and b*).

6.1.b. Using available science and local expertise, current ecological conditions are compared to the historical conditions within the landscape context, considering the elements identified in 6.1.a.

6.1.c. Prior to the commencement of management activities, potential environmental impacts and their cumulative effects are evaluated.

6.1.d. Using assessments derived from the above information, options are developed and implemented to maintain and/or restore the long-term ecological functions of the forest (*see also 7.1.c*). Actions needed to avoid and mitigate negative environmental impacts are identified, and a mitigation plan is formulated (*see also criterion 7.1*).

6.1.e. Assessments developed under 6.1.a. – d. for public lands are made available to the public.

6.2. Safeguards shall exist which protect rare, threatened and endangered species and their habitats (e.g., nesting and feeding areas). Conservation zones and protection areas shall be established, appropriate to the scale and intensity of forest management and the uniqueness of the affected resources. Inappropriate hunting, fishing, trapping and collecting shall be controlled.

6.2.a. If consultation of databases for rare species and/or plant community types (*see Glossary and 6.1*) indicate the likely presence of a rare species (*see Glossary*), then either a survey is conducted prior to the commencement of management activities (to verify the species' presence or absence) or the forest owner or manager manages as though the species were present. If a rare species is determined to be present, its location is reported to the manager of the species' database.

6.2.b. When a rare species and/or plant community type is present or assumed to be present, modifications are made in both the management plan and its implementation in order to maintain, improve, or restore the species and its habitat.

6.2.c. Conservation zones (*see Glossary*) and other protected areas for existing rare species and/or plant community types are created and/or maintained to enhance the viability of populations and their habitats, including their connectivity within the landscape. Forest managers consult recovery plans and specialists, such as biologists or ecologists, to determine species' habitat needs.

6.3. Ecological functions and values shall be maintained intact, enhanced, or restored, including:

- a) Forest regeneration and succession.**
- b) Genetic, species, and ecosystem diversity.**
- c) Natural cycles that affect the productivity of the forest ecosystem.**
- d) Old-growth stands and forests**
- e) Retention**
- f) Even-aged silvicultural systems**

Applicability note: Indicators under 6.3.a. & b. may have limited applicability for managers of small and mid-sized forest properties because of their limited ability to coordinate their activities with other owners within the landscape, or to significantly maintain and/or improve landscape-scale vegetative patterns.

6.3.a. Forest regeneration and succession

6.3.a.1. Forest owners or managers use the following information to make management decisions regarding regeneration: landscape patterns (e.g., successional processes, land use/land cover, non-forest uses, habitat types); ecological characteristics of adjacent forested stands (e.g., age, productivity, health); species' requirements; and frequency, distribution, and intensity of natural disturbances.

6.3.a.2. Forest owners or managers maintain or restore portions of the forest to the range and distribution of age classes of trees that would result from natural processes inherent to the site.

6.3.a.3. Silvicultural practices generate stand conditions (species composition, physical structures, habitat types, and ecological processes) that are similar to those produced by disturbance regimes typical for the site

6.3.b. Genetic, species, and ecosystem diversity

6.3.b.1. The forest owner or manager selects trees for harvest, retention, and planting in a manner that maintains or enhances the productive capacity, genetic diversity and quality, and species diversity of the residual stand.

6.3.b.2. Native seeds of known provenance are used for artificial regeneration.

6.3.b.3. Habitat components necessary to support native species are protected, maintained, and/or enhanced within the harvest unit and across the FMU (*see also 6.3.e.1*).

For example:

- *vertical and horizontal structural complexity*
- *understory species diversity*
- *food sources*
- *nesting, denning, hibernating, and roosting structures*
- *habitats and refugia for sedentary species and those with special habitat requirements*

6.3.b.4. At the FMU level, a comprehensive range of native species, habitats, stand types, age and size classes (including large and old trees), and physical structures is maintained over time.

6.3.c. Natural cycles that affect the productivity of the forest ecosystem

6.3.c.1. If a decline in soil fertility or forest health is observed, forest owners or managers determine the source of the decline through tests and investigation. If soil degradation is found to be the source of the decline, forest owners or managers modify soil-management techniques.

For example:

- *Primary management objectives shift from commercial production to restoration.*
- *Site preparation is minimized.*
- *The lightest practical equipment with the lowest ground pressure is used.*
- *Whole-tree harvesting is discontinued, and tops are left in the forest.*
- *Longer rotations and a diversity of species are used in lieu of artificial fertilization.*
- *Natural, early successional processes are allowed or encouraged.*

6.3.c.2. Forest managers identify and apply site-specific fuels management practices, based on: (1) natural fire regimes, (2) risk of wildfire, (3) potential economic losses, and (4) public safety.

6.3.c.3. Post-harvest management activities maintain soil fertility, structures, and functions.

For example:

- *Slash is randomly distributed across the harvest area.*
- *Burning is used where it is appropriate to the natural disturbance regime.*

6.3.c.4. Prescriptions for salvage harvests balance ecological and economic considerations.

For example:

- *Coarse woody debris is maintained.*
- *Den trees and snags are maintained.*
- *Natural, background levels of 'pest' populations are allowed exist before measures to control such populations are implemented.*

6.3.d. Old-growth stands and forests

This section uses the following definitions:

Type 1 stands are those stands of at least 20 contiguous acres that have never been logged and that display late successional/old-growth characteristics. Stands that have never been logged, but which are smaller than 20 acres, are assessed for their ecological significance, and may also be classified as Type 1 stands. Areas containing a low density of existing roads may still be considered Type 1 stands, provided the roads have not caused significant, negative ecological impacts.

Type 2 stands are old unlogged stands smaller than 20 acres that are not classified as Type 1, and other stands of at least 3 contiguous acres that have been logged, but which retain significant late-successional/old-growth structure and functions.

Type 3 stands are those that have residual old-growth trees and/or other late-successional/old-growth characteristics, but do not meet the definition of a Type 2 stand.

Applicability note: When forest management activities (including timber harvest) create and maintain conditions that emulate Type 2 or 3 stands, the management system that created those conditions may be used to maintain them. Such areas may be considered as representative samples for the purposes of meeting criterion 6.4.

6.3.d.1. Non-tribal Type 1 stands are not harvested. Timber harvests may be certifiable on Type 1 American Indian lands, in recognition of their sovereignty and unique ownership. Requirements for certification of tribal operations that include harvest in Type 1 stands are:

- Type 1 forests comprise a significant portion of the tribal ownership.
- A history of forest stewardship by the tribe exists.
- High Conservation Value Forest attributes are maintained.
- Old-growth structures are maintained in the managed stand.
- Conservation zones representative of Type 1 stands have been established.
- Landscape level considerations have been addressed.
- Rare species (*see Glossary*) are protected.

6.3.d.2. Management activities adjacent to Type 1 stands are conducted to minimize abrupt forest/opening edge effects and other negative impacts on the ecological integrity of these areas.

6.3.d.3. Timber harvests in Type 2 and Type 3 stands maintain late-successional/old-growth structures, functions, and components, including individual trees that function as refugia. There is no net decline in the area or the old-growth characteristics of Type 2 or Type 3 stands due to forest management, with the exception of Type 3 stands that are elevated to Type 2 stands.

6.3.d.4. Where Type 1, 2, and 3 stands are under-represented in the landscape, a portion of the forest is managed to create late-successional/old-growth characteristics.

6.3.e. Retention

Applicability note: Several types of retention are required by this standard with respect to green trees, snags, and woody debris. The amounts of each of the following types of retention and/or set-asides are not necessarily cumulative.

Retention and set-aside provisions include:

- *habitats of sensitive, threatened, and endangered species (criterion 6.2)*
- *old-growth and late successional trees (6.3.d)*
- *post-harvest, within-stand tree retention (6.3.e.5)*
- *green trees around snags (6.3.e.2)*
- *native hardwoods (6.3.e.3)*
- *representative stand types (criterion 6.4)*
- *riparian management zones (criterion 6.5)*
- *late-seral management areas (10.5.a)*

6.3.e.1. Forest owners and managers retain (or, if absent, recruit) legacy trees, old and large trees, snags and woody debris to sustain populations of native plants, fungi, and animals, both within the harvest unit and across the FMU.

For example:

- *Old trees with irreplaceable characteristics are retained.*
In some dry regions, retaining approximately 10 tons of debris per acre may be sufficient. In wetter regions, retaining 20 tons of debris per acre may be sufficient.
- *Debris is well distributed spatially and by size and decay class, with a goal of at least 4 large pieces (approximately 20" diameter X 15' length) per acre.*
- *Three to 10 snags per acre (averaged over 10 acres) are maintained or recruited.*
- *Snags are well represented by size, species, and decay class.*

6.3.e.2. Where necessary to protect against wind throw and to maintain microclimate, green trees and other vegetation are retained around snags, down woody debris, and other retention components.

6.3.e.3. Native hardwoods and understory vegetation are retained as needed to maintain and/or restore the natural mix of species and forest structure.

6.3.e.4. Live trees and native understory vegetation are retained within the harvest unit in proportions and configurations that are consistent with the characteristic natural

disturbance regime in each community type (*see Glossary*), unless retention at a lower level is necessary for purposes of restoration.

6.3.e.5. Within harvest openings larger than 6 acres, 10-30% of pre-harvest basal area is retained. The levels of green-tree retention depend on such factors as: opening size, legacy trees, adjacent riparian zones, slope stability, upslope management, presence of critical refugia, and extent and intensity of harvesting across the FMU. Retention is distributed as clumps and dispersed individuals, appropriate to site conditions. Retained trees comprise a diversity of species and size classes, which includes large and old trees.

6.3.f. Even-aged silvicultural systems

6.3.f.1. Even-aged silviculture (*see Glossary*) may be employed where:

- 1) native species require openings for regeneration or vigorous young-stand development, or
- 2) it restores the native species composition, or
- 3) it is needed to restore structural diversity in a landscape lacking openings, while maintaining connectivity of older, intact forests.

6.3.f.2. When trees are planted, the plantings maintain or enhance the composition and/or diversity of the forest ecosystem.

6.3.f.3. If regeneration harvest ages do not approach culmination of mean annual increment (CMAI, *see Glossary*), retention approaches the upper end of the range required in 6.3.e.5.

6.3.f.4. Regeneration harvest blocks in even-aged stands average 40 acres or less. No individual block is larger than 60 acres (*see 6.3.e.4. and 6.3.e.5. for provisions of within-stand retention in openings larger than 6 acres*).

6.3.f.5. Regeneration in previously harvested areas reaches a mean height of at least seven feet or achieves canopy closure (*see Glossary*) before adjacent areas are regeneration harvested.

6.4. Representative samples of existing ecosystems within the landscape shall be protected in their natural state and recorded on maps, appropriate to the scale and intensity of operations and the uniqueness of the affected resources.

Applicability Note: When forest management activities (including timber harvest) create and maintain conditions that emulate an intact, mature forest or other successional phases that may be under-represented in the landscape, the management system that created those conditions may be used to maintain them, and the area may be considered as a representative sample for the purposes of meeting this criterion.

Ecologically viable representative samples are designated to serve one or more of three purposes: (1) to establish and/or maintain an ecological reference condition, (2) to create or maintain a representative system of protected areas (i.e., includes samples of all successional phases, forest types, and plant communities (see Glossary and Appendix D), and/or (3) to protect a feature that is sensitive, rare, or unique in the landscape.

Areas serving the purposes of (1) and (2) may move across the landscape as under-represented conditions change, or may be fixed in area and manipulated to maintain the desired conditions. Areas serving the purposes of (3) are fixed in location.

Forests of all sizes may be conducive to protection of fixed features, such as rock outcrops and bogs. Medium-sized and large forests may be more conducive than small forests to the maintenance of successional phases and disturbance patterns.

While public lands (see Glossary) are expected to bear primary responsibility for protecting representative samples of existing ecosystems, FSC certification of private lands (especially those with large contiguous areas of forest) can contribute to such protection.

In some cases, the forest owner or manager may designate set-asides by formal means (conservation easements or purchase of conservation areas) on lands other than the certified FMU. Any off-FMU designation will be made to better implement or meet regional, state, and landscape level forest ecosystem and wildlife habitat restoration needs, plans, and objectives.

6.4.a. Forest owners or managers assess the adequacy of representation of their forest types in protected areas across the landscape. This assessment entails collaboration with state natural heritage programs; public agencies; regional, landscape, and watershed planning efforts; universities; and/or local conservationists. It may also include gap analysis.

6.4.b. Where existing protected areas within the landscape are not of a size and configuration to serve one or more of the three purposes described in the applicability note above, forest owners or managers, whose properties are conducive to the establishment of such areas, designate ecologically viable areas that serve these purposes. The size and arrangement of on-site and off-site representative sample areas are documented.

6.4.c. The size and extent of representative samples on public lands being considered for certification is determined through a science-based (e.g., gap analysis, regional reserve design principals and methodologies), transparent planning process that is accessible and responsive to the public.

6.4.d. Managers of large, conterminous public forests (see Glossary) establish and maintain representative protected areas sufficient in size to maintain species dependent on interior core habitats.

6.5. Written guidelines shall be prepared and implemented to: control erosion; minimize forest damage during harvesting; road construction; and all other mechanical disturbances; and protect water resources.

Applicability note: Soil cover and fertility are maintained in a condition that is sufficient to: (1) minimize soil erosion, (2) protect soil microbial communities, (3) protect inherent site productivity, (4) protect surface water quality, and (5) protect the natural processes in aquifers. The type and extent of canopy cover and groundcover required to

accomplish the above is dependent on the following: slope; stability of the soil ; potential for soil compaction; and characteristics of the climate , such as the intensity and frequency of precipitation.

Logging and Site Preparation

6.5.a. Logging operations and the use of roads and skid trails occur only when soil compaction, erosion, and sediment transport do not result in degradation of water quality, site productivity, or habitats.

For example, soils are either dry enough or frozen enough to minimize disturbance and compaction.

6.5.b. Logging damage to regeneration and residual trees is minimized during harvest operations.

6.5.c. Areas in which the risk of landslides is extreme (considering factors, such as slope, soil, and concavity), are neither logged nor roaded.

6.5.d. On sites with a high risk of landslides, the forest owner or manager assures that such risks will not be exacerbated by management operations, especially where landslide “runout” may affect water bodies.

6.5.e. In order to minimize soil disturbance, silvicultural techniques and logging equipment are selected in accordance with slope and the hazard rating for soil erosion.

For example:

- *On slopes greater than 30 percent, ground-based yarding is used only when it is possible to do so without exacerbating soil erosion.*

- *On slopes greater than 50%, cable or helicopter yarding is used if it is technically feasible and will not result in adverse environmental effects due to the management operations.*

6.5.f. Plans for site preparation either minimize impacts to forest resources or specify the following mitigations:

- (1) Slash is concentrated only as much as necessary to achieve the goals of site preparation and the reduction of fuels to moderate or low levels of fire hazard..
- (2) Scarification of soils is limited to the minimum necessary to achieve successful regeneration of desired species.
- (3) Topsoil is minimally disturbed.

Transportation System (including permanent and temporary haul roads, skid trails, and landings)

6.5.g. The transportation system is pre-planned, designed, located, constructed, maintained, and/or reconstructed to minimize the extent and impact of the system and its potential cumulative adverse effects:

For example:

- *As a part of watershed assessments on public lands, habitats for salmonids and other threatened and endangered aquatic species are identified. If shown to be necessary, road density is reduced in such habitats and/or mitigated within the watershed.*
- *Roads, landings, and skid trails are minimized.*
- *Displacement of soil, sedimentation of streams, and impacts to water quality are minimized.*
- *Patches of habitat and migration corridors are conserved.*
- *Roads constructed across slopes in excess of 60 percent are full bench cuts or with minimal side-cast.*
- *Roads are built on flat areas or stable slopes.*

- *The integrity of riparian zones and buffers surrounding other valuable ecological elements are conserved (e.g., wetlands, habitat for sensitive species, and interior old-growth forest).*
- *Permanent roads have structures to control soil erosion year-round and are managed under a winter maintenance plan.*
- *Cooperative transportation planning with agencies, such as watershed councils, is used to minimize negative cumulative environmental impacts across the landscape.*

6.5.h. Landings are designed and constructed to minimize soil erosion.

For example:

- *Landings are located on ecologically suitable sites.*
- *Landings are limited to the smallest practical safe area.*
- *Landings are sloped to divert runoff to non-erosive areas.*
- *Landings are seeded and mulched or covered with slash after use.*

6.5.i. Access to temporary and permanent roads is controlled to minimize impacts to soil and biota while simultaneously allowing legitimate access as addressed by Principles 3 & 4 and identified in the management plan.

For example: Roads without a weather resistant surface (e.g., soil, or native-surfaced roads) are used only during periods of weather when conditions are favorable to minimize road damage, surface erosion, and sediment transport.

Access is restricted to roads that are not immediately needed for purposes of management.

6.5.j. Failed drainage structures or other areas of active erosion caused by roads and skid trails are identified, and measures are taken to correct the drainage and erosion problems.

6.5.k. Access is restricted and erosion is controlled on infrequently used roads.

For example:

- *Water bars are installed and culverts are removed or maintained.*
- *Roadbeds are outsloped.*
- *Exposed soil is seeded and/or mulched.*

6.5.l. Unnecessary roads are permanently decommissioned or put to bed.

For example:

- *Bridges and culverts are removed; water bars are installed.*
- *Slopes are re-contoured and/or re-vegetated.*
- *Ecologically functional drainage patterns are established.*

Stream and Water Quality Protection

Applicability note: The following water quality requirements of this standard are superceded when and where state or federal laws, regulations, or other contractual requirements are more stringent. This section uses the following definitions:

Category A stream: A stream that supports or can support populations of native fish and/or provides a domestic water supply.

Category B stream: Perennial streams that do not support native fish and are not used as a domestic water supply.

Category C stream: An intermittent stream that never the less has sufficient water to host populations of non-fish aquatic species

Category D stream: A stream that flows only after rainstorms or melting snow and does not support populations of aquatic species

6.5.m. Streams, vernal pools, lakes, wetlands, seeps, springs, and associated riparian areas are managed to maintain and/or restore hydrologic processes, water quality, and habitat characteristics (*see NMFS (1996)*¹; state water quality standards; *Karr (1981)*²), which may include:

- the capacity for water to infiltrate the soil
- habitat for riparian species
- moderating water temperature
- controlling sedimentation
- clean gravel for spawning
- physical structures to protect the integrity of the stream channel,
- including pools used by anadromous fish

6.5.n. Forest owners or managers retain and recruit sufficient large, green trees; snags; understory vegetation; down logs; and other woody debris in riparian zones to provide shade, erosion control, and in-channel structures.

6.5.o. For Category A streams, and for lakes and wetlands larger than one acre, an inner buffer zone is maintained. The inner buffer is at least 50 feet wide (slope distance) from the active high water mark (on both sides) of the stream channel and increases depending on forest type, slope stability, steepness, and terrain. Management activities in the inner buffer:

- maintains or restore the native vegetation
- are limited to single-tree selection silviculture

¹National Marine Fisheries Service (NMFS). 1996. Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Watershed Scale. Silver Spring, MD: The National Marine Fisheries Service, Environmental and Technical Services Division, Habitat Conservation Branch. Table 1 from this report is reproduced in Appendix F.

² Karr, James R. 1980. Assessment of biotic integrity using fish communities. *Fisheries* 6(6):21-27.

- retain and allows for recruitment of large live and dead trees for shade and stream structure
- retain canopy cover and shading sufficient to moderate fluctuations in water temperature, to provide habitat for the full complement of aquatic and terrestrial species native to the site, and maintain or restore riparian functions
- exclude use of heavy equipment, except to cross streams at designated places, or where the use of such equipment is the lowest impact alternative
- avoid disturbance of mineral soil; where disturbance is unavoidable, mulch and seed are applied before the rainy season
- avoid the spread of pathogens³ and noxious weeds
- avoid road construction and reconstruction

6.5.p. For Category A streams, and for lakes and wetlands larger than one acre, an outer buffer zone is maintained. This buffer extends from the outer edge of the inner buffer zone to a distance of at least 150 feet from the edge of the active high water mark (slope distance, on both sides) of the stream channel. In this outer buffer, harvest occurs only where:

- single-tree or group selection silviculture is used
- post harvest canopy cover maintains shading sufficient to moderate fluctuations in water temperature, provide habitat for the full compliment of aquatic and terrestrial species native to the site, and maintain or restore riparian functions
- new road construction is avoided and reconstruction enhances riparian functions and reduces sedimentation
- disturbance of mineral soil is avoided; where disturbance is unavoidable, mulch and seed are applied before the rainy season

6.5.q. For Category B streams, a 25-foot (slope distance) inner buffer is created and managed according to provisions for inner buffers for Category A. A 75-foot (slope distance) outer buffer (for a total buffer of 100 feet) is created and managed according to provisions for outer buffer for Category A (*see 6.5.n*).

6.5.r. For Category C streams, and for lakes and wetlands smaller than one acre, a buffer zone 75 feet wide (on both sides of the stream) is established that constrains management activities to those that are allowed in outer buffer zones of Category A streams.

6.5.s. For Category D streams, management:

- maintains root strength and stream bank and channel stability
- recruits coarse wood to the stream system
- minimizes management-related sediment transport to the stream system

6.5.t. Grazing by domestic animals is controlled to protect the species composition and viability of the riparian vegetation and the banks of the stream channel from erosion.

³ Port Orford cedar is particularly vulnerable to the spread of root-borne pathogens after soil disturbance.

For example, the numbers of livestock, as well as the seasonality and duration of grazing, are controlled to protect the aquatic-riparian habitat, with special emphasis afforded sensitive aquatic and riparian species.

6.5.u. Stream crossings are located and constructed to minimize fragmentation of aquatic habitat (*see Glossary*), maintain water quality, and either to accommodate a 100-year peak flood event or to limit the consequences of an unavoidable failure. Road crossings, dams, and other human-made structures that impede fish passage are removed or modified to enable passage, taking legal or environmental constraints into account.

For example:

- *Crossings of riparian management zones are minimized.*
- *Stream crossings are installed at an angle that causes the least ecological disturbance to the waterway.*
- *Culverts allow free passage of aquatic organisms.*

6.6. Management systems shall promote the development and adoption of environmentally friendly non-chemical methods of pest management and strive to avoid the use of chemical pesticides. World Health Organization Type 1A and 1B and chlorinated hydrocarbon pesticides; pesticides that are persistent, toxic or whose derivatives remain biologically active and accumulate in the food chain beyond their intended use; as well as any pesticides banned by international agreement, shall be prohibited. If chemicals are used, proper equipment and training shall be provided to minimize health and environmental risks

6.6.a. Forest owners and managers demonstrate compliance with FSC Policy paper: “Chemical Pesticides in Certified Forests, Interpretation of the FSC Principles and Criteria, July 2002” and comply with prohibitions and/or restrictions on World Health Organization Type 1A and 1B and chlorinated hydrocarbon pesticides; pesticides that are persistent, toxic or whose derivatives remain biologically active and accumulate in the food chain beyond their intended use; as well as any pesticides banned by international agreement.

6.6.b. Forest owners or managers employ silvicultural systems, integrated pest management, and strategies for controlling pests and/or unwanted vegetation that result in the least adverse environmental impact, with the goal of reducing or eliminating chemical use. Chemical pesticides, fungicides, and herbicides are used only when and where research or empirical experience has demonstrated that less environmentally hazardous, non-chemical pest/disease management practices are ineffective.

For example, components of silvicultural systems, integrated pest management, and strategies for controlling vegetation may include:

- *creation and maintenance of habitat that discourages pest outbreaks*
- *creation and maintenance of habitat that encourages natural predators*
- *evaluation of pest populations and establishment of action thresholds*
- *diversification of species composition (see Glossary) and structure*
- *use of mechanical methods*
- *use of prescribed fire*

6.6.c. When and where chemicals are applied, the most environmentally safe and efficacious chemicals are used. Chemicals are narrowly targeted, and minimize affects on non-target species.

6.6.d. Chemicals are used only when and where they pose no threat to supplies of domestic water, aquatic habitats, or habitats of Rare species.

6.6.e. When chemicals are used, the effects and impacts are monitored and the results are used for adaptive management. Records are kept of pest occurrences, control measures, and incidences of worker exposure to chemicals.

6.6.f. Forest owners or managers develop written strategies for control of pests as a component of the management plan (criterion 7.1), which comply with official FSC policy.

6.6g. When chemicals are used, a written prescription is prepared that fully describes the risks and benefits of their use and the precautions that workers will employ.

6.7. Chemicals, chemical containers, liquid and solid non-organic wastes, including fuel and oil, shall be disposed of in an environmentally appropriate manner at off-site locations.

6.7.a Forest Owners and managers prevent the unintended release of chemicals, petroleum products, containers and nonorganic wastes, and minimize health and environmental risks due to their disposal.

For example forest owners and managers minimize health and environmental risks by:

- *Immediately containing spills of hazardous material, as required by applicable regulations, and then engaging qualified personnel to perform the appropriate removal and remediation.*
- *Routinely checking equipment for leaking fluids. Broken and/or leaking equipment and parts are repaired or removed from the forest; discarded parts are taken to a designated disposal facility.*
- *Parked equipment outside of riparian management zones and away from vernal pools and supplies of ground water to prevent toxic fluids from leaking into them*
- *Disposing of contaminated water and containers in a location and manner that is environmentally sound.*

6.7.a. In the event of a spill of hazardous material, forest owners or managers immediately contain the material, report the spill as required by applicable regulations, and engage qualified personnel to perform the appropriate removal and remediation.

6.7.b. Equipment is routinely checked for leaking fluids. Broken and/or leaking equipment and parts are repaired or removed from the forest; discarded parts are taken to a designated disposal facility.

6.7.c. Equipment is parked outside of riparian management zones and away from vernal pools and supplies of ground water to prevent toxic fluids from leaking into them.

6.7.d. If washing chemical containers is necessary, the contaminated water and containers are disposed of in a location and manner that is environmentally sound.

6.8. Use of biological control agents shall be documented, minimized, monitored and strictly controlled in accordance with national laws and internationally accepted scientific protocols. Use of genetically modified organisms shall be prohibited.

Applicability Note: Genetically improved organisms (e.g., Mendelian crossed) are not considered to be genetically modified organisms, and may be used. (See FSC policy on genetically modified organisms at http://www.fsc.org/en/whats_new/documents/Docs_cent/2. The prohibition of genetically modified organisms applies to all organisms including trees.

6.8.a. Exotic (i.e., non-indigenous), non-invasive predators or biological control agents are used only as part of a pest management strategy for the control of exotic species of plants, pathogens (*see Glossary*), insects, or other animals when other pest control methods are ineffective, or can reasonably be expected to be proven ineffective. Such use is contingent on peer-reviewed scientific evidence that the agents in question are non-invasive and are safe for indigenous species.

6.9. The use of exotic species shall be carefully controlled and actively monitored to avoid adverse ecological impacts.

6.9.a. The use of exotic plant species (*see Glossary*) is contingent on peer-reviewed scientific evidence that any species in question is non-invasive and does not diminish biodiversity. If non-invasive exotic plant species are used, their provenance and the location of their use are documented, and their ecological effects are actively monitored.

6.9.b. Forest owners or managers develop and implement control measures for invasive exotic plants.

6.10. Forest conversion to plantations or non-forest land uses shall not occur, except in circumstances where conversion:

- a) entails a very limited portion of the forest management unit; and**
- b) does not occur on high conservation value forest areas; and**
- c) will enable clear, substantial, additional, secure, long term conservation benefits across the forest management unit.**

Note: The Working Group considers this criterion sufficiently explicit and measurable. Indicators are not required.

PRINCIPLE 7. MANAGEMENT PLAN

A management plan -- appropriate to the scale and intensity of the operations -- shall be written, implemented, and kept up to date. The long-term objectives of management, and the means of achieving them, shall be clearly stated.

7.1. The management plan and supporting documents shall provide:

(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 protection 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.

Applicability Note: The management plan may consist of a variety of documents not necessarily unified into a single planning document but which, nevertheless, represents an integrated strategy for managing the forest.

7.1.a. Management objectives

7.1.a.1. A written management plan is prepared that: (1) includes the landowner's vision (ecological, silvicultural, social, and economic), desired future conditions, potential future outcomes, goals, and objectives, as well as short-term and long-term actions and (2) incorporates strategies for the maintenance, enhancement, and/or restoration of forest resource. The actions and objectives are specific, achievable, measurable, and adaptive. (The elements of a comprehensive forest management plan are found in Appendix H.)

7.1.b. Description of forest resources to be managed, environmental limitations, land use and ownership status, socioeconomic conditions, and profile of adjacent lands

7.1.b.1. Using data collected proportionally to the scale and intensity of management, the forest owner or manager describes the following resources:

- timber
- fish and wildlife
- harvested non-timber forest products (e.g., botanical and mycological)
- non-economic natural resources

7.1.b.2. Descriptions of special management areas, Rare species and their habitats, Rare plant communities, and other ecologically sensitive features in the forest are included in the management plan.

7.1.b.3. A description of past land uses is included in the management plan and incorporated into the goals and objectives.

7.1.b.4. The legal status of the forest and its resources is identified in the management plan (e.g., ownership, usufruct rights, treaty rights, easements, deed restrictions, and leasing arrangements).

7.1.b.5. Relevant cultural and socioeconomic issues (e.g., traditional and customary rights of use, access issues, recreational uses, and issues of employment), conditions (e.g., composition of the workforce, stability of employment, and changes in forest ownership and tenure), and areas of special significance (e.g., ceremonial and archeological sites) are identified in the management plan.

7.1.b.6. Landscape-level considerations within the ownership and among adjacent and nearby lands, including major bodies of water, critical habitats, and riparian corridors shared with adjacent ownerships, are incorporated in the management plan.

7.1.c. Description of silvicultural and/or other management system

7.1.c.1. The choice of silvicultural system(s) and prescriptions are based on the integration of ecological and economic characteristics (e.g., successional processes, soil characteristics, existing species composition and physical structures, desired future conditions, and market conditions) (*see also 6.3.a*).

7.1.c.2. Prescriptions are prepared prior to harvesting, site preparation, pest control, burning, and planting and are made available to people who carry out the prescriptions.

7.1.d. Rationale for the rate of annual harvest and species selection

7.1.d.1. The management plan is based on the best available data on growth, yield, stocking, and regeneration. (*see also 5.6.b*).

7.1.d.2. Species selection meets the economic goals and objectives of the forest owner or manager, while maintaining or improving the ecological composition, structures, and functions of the forest.

7.1.e. Provisions for monitoring forest growth and dynamics (*see also Principle 8*)

Note: The Working Group considers this sub-criterion sufficiently explicit and measurable. Indicators are not required.

7.1.f. Environmental safeguards based on environmental assessments (*see also Criterion 6.1*)

Note: The Working Group considers this sub-criterion sufficiently explicit and measurable. Indicators are not required.

7.1.g. Plans for the identification and protection of rare, threatened, and endangered species. (*see also Criterion 6.3*)

Note: The Working Group considers this sub-criterion sufficiently explicit and measurable. Indicators are not required.

7.1.h. Maps describing the forest resource base including protected areas, planned management activities, and land ownership.

7.1.h.1. Appropriate to the scale and intensity of the operation, and to the relevance of the management of the FMU, the following maps are included in the management plan:

- property boundaries
- roads
- areas of timber production
- forest types by age class
- topography
- soils
- riparian zones
- streams, springs, and wetlands
- archaeological sites
- areas of cultural and customary use
- locations of and habitats for rare species
- designated High Conservation Value Forests

Maps of some features may be kept confidential to protect their integrity.

7.1.i. Description and justification of harvesting techniques and equipment to be used. (see also *Criteria 5.6 and 6.5*)

Note: The Working Group considers this sub-criterion sufficiently explicit and measurable. Indicators are not required.

7.2. The management plan shall be periodically revised to incorporate the results of monitoring or new scientific and technical information, as well as to respond to changing environmental, social and economic circumstances.

7.2.a. Relevant provisions of the management plan are modified: (1) every 10 years or in accordance with the frequency of harvest for the stand or forest, whichever is longer; (2) in response to effects from illegal and/or unauthorized activities (e.g., damage to roads, depletion of timber and non-timber resources), (3) in response to changes caused by natural disturbances.

7.3. Forest workers shall receive adequate training and supervision to ensure proper implementation of the management plans.

Note: The Working Group considers this criterion sufficiently explicit and measurable. Indicators are not required.

7.4. While respecting the confidentiality of information, forest managers shall make publicly available a summary of the primary elements of the management plan, including those listed in Criterion 7.1.

Applicability Note: Forest owners or managers of private forests may withhold proprietary information (e.g., timber volumes by size and age class, marketing strategies, and other financial information). (see also Criterion 8.5)

Note: The Working Group considers this criterion sufficiently explicit and measurable. Indicators are not required.

PRINCIPLE 8. MONITORING AND ASSESSMENT

Monitoring shall be conducted -- appropriate to the scale and intensity of forest management -- to assess the condition of the forest, yields of forest products, chain of custody, management activities and their social and environmental impacts.

Applicability Note: On small and medium-sized forests, an informal, qualitative assessment may be appropriate. On large and/or intensively managed forests, formal, quantitative monitoring is probably required.

8.1. The frequency and intensity of monitoring should be determined by the scale and intensity of forest management operations as well as the relative complexity and fragility of the affected environment. Monitoring procedures should be consistent and replicable over time to allow comparison of results and assessment of change.

8.1.a. Implementation of the management plan is periodically monitored to assess:

- the degree to which management vision, goals, and objectives have been achieved
- deviations from the management plan
- unexpected effects of management activities
- social and environmental effects of management activities

8.1.b. Inventories noted under section 8.2 below, are updated over periods not to exceed ten years, or the harvest frequency on the ownership, whichever is longer. Relevant ecological indicators (e.g., the status of and capacity for regeneration, habitat qualities of rare species, impacts to the quality of soil and water) are monitored before and after field management activities take place. Detailed monitoring is implemented at sites of special ecological significance (*see Appendix G*).

8.2. Forest management should include the research and data collection needed to monitor, at a minimum, the following indicators:

- (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.**

8.2.a. Yield of all forest products harvested

8.2.a.1. The forest owner or manager maintains records of timber-harvest volumes.

8.2.a.2. The forest owner or manager maintains records of the yield of harvested non-timber forest products.

8.2.a.3. Significant, unanticipated removal (e.g., theft and poaching) of forest products is monitored, and recorded, and appropriate action is taken.

8.2.b. Growth rates, regeneration, and condition of the forest

8.2.b.1. An inventory system is maintained to monitor:

- growth, mortality, stocking, and regeneration of the timber
- stand composition and structure
- effects of disturbances to the resources (e.g., disease, wind, fire, damage by insects and/or mammals)
- abundance, regeneration, and habitat conditions of non-timber forest products
- characteristics of water quality, such as temperature, sedimentation, and chemical loads (*see Appendix G; Karr 1981*)
- characteristics of terrestrial and aquatic habitats
- Soil characteristics

8.2.c. Composition and observed changes in the flora and fauna

8.2.c.1. Forest owners or managers periodically monitor and assess (1) their contribution toward recovery goals for threatened and endangered species in relation to changes in major habitats and populations, (2) changes in major habitat elements, and (3) presence and/or absence of and changes in the occurrence of Rare species.

8.2.d. Environmental and social impacts of harvesting and other operations

8.2.d.1. The environmental impacts of site-disturbing activities (e.g., road construction and repair, harvesting, and site preparation) are monitored after completion.

8.2.d.2. A monitoring program is in place to assess the condition and environmental impacts of the forest-road system.

8.2.d.3. Generation or maintenance of local jobs and public responses to management activities are monitored.

8.2.d.4. The influence of forest management on the viability of forest-based livelihoods is monitored, especially in the case of large forest holdings.

For example, the destination of forest resources is documented.

8.2.d.5. The opportunity to jointly monitor sites of special significance (*see also criteria 3.2 and 3.3*) is offered to tribal representatives in order to determine adequacy of the management prescriptions.

8.2.e. Cost, productivity, and efficiency of forest management

8.2.e.1. Forest owners and managers monitor cash flows, costs, revenues, profit margins, and other financial indicators, to assure long-term financial viability.

8.2.e.2. Forest owners and managers take into account the economic benefits of all forest goods and services, including water quality, fish and wildlife, aesthetics, recreational uses, and carbon sequestration, and identify ways in which they might generate income.

8.3. Documentation shall be provided by the forest manager to enable monitoring and certifying organizations to trace each forest product from its origin, a process known as the "chain of custody."

Note: To access the management requirements for chain-of-custody see Section 3.6 of Chain of Custody Standards, FSC Accreditation Manual.

Note: The Working Group considers this criterion sufficiently explicit and measurable. Indicators are not required.

8.4. The results of monitoring shall be incorporated into the implementation and revision of the management plan.

8.4.a. Discrepancies between outcomes (i.e., yields, growth, ecological changes) and desired future conditions (i.e., plans, projections, anticipated impacts) are appraised. Management plans and actions are revised to better achieve the desired future conditions.

8.5. While respecting the confidentiality of information, forest managers shall make publicly available a summary of the results of monitoring indicators, including those listed in Criterion 8.2.

Applicability Note: Forest owners or managers of private forests may withhold proprietary information (e.g., timber volumes and age classes, marketing strategies, and other financial information).

8.5.a. A summary of monitoring results is maintained up-to-date and is made available to the public on request, either at no cost or at a nominal price.

PRINCIPLE 9. MAINTENANCE OF HIGH CONSERVATION VALUE FORESTS

Management activities in high conservation value forests shall maintain or enhance the attributes that define such forests. Decisions regarding high conservation value forests shall always be considered in the context of a precautionary approach.

High Conservation Value Forests are those that possess one or more of the following attributes:

- a) 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**
- b) forest areas that are in or contain rare, threatened or endangered ecosystems**
- c) forest areas that provide basic services of nature in critical situations (e.g. watershed protection, erosion control)**

d) 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).

Applicability note: Classification of a forest as a "high conservation value forest" (HCVF) does not automatically preclude active management. In addition to the forest types listed in sections (a) through (d) of the HCVF definition, HCVFs in the Pacific Coast region include:

- forest types listed in Appendix D (i.e., rare communities in the region), unless further refined by consultations with heritage programs, local native plant societies, local experts, and NGOs
- primary, late-successional, or old-growth forests (*see also criterion 6.3.*)
- roadless areas (areas that have never had logging roads, skid trails, etc.) larger than 500 acres or that have unique attributes
- habitats for rare species, and may include:
 - water catchments that provide water supplies to municipalities
 - buffers and corridors within landscape-level plans that are critical to the maintenance of processes and functions of high conservation value areas (*see also criteria 6.3 - 6.5*); and
 - native grasslands, wetlands, and other ecologically important non-forested sites within the forest.

Note: The status of HCVFs on American Indian lands requires special consultation between certifying teams and the affected tribe or nation.

9.1. Assessment to determine the presence of the attributes consistent with High Conservation Value Forests will be completed, appropriate to scale and intensity of forest management.

9.1.a. Attributes and locations of High Conservation Value Forests are determined by the identification of globally, nationally, regionally, and locally unique HCV attributes (*see Appendix D*) that may be present in or adjacent to the forest, and their delineation by habitat descriptions and maps.

9.2. The consultative portion of the certification process must place emphasis on the identified conservation attributes, and options for the maintenance thereof. (*see also 9.1.a.*)

9.2.a. Consultations are held with stakeholders and scientists to confirm that proposed HCV locations and attributes have been accurately identified. On public forests, a transparent and accessible public review of proposed HCV attributes and areas is carried out. Information from stakeholder consultations and other public review is integrated into HCVF descriptions and delineations.

9.3. The management plan shall include and implement specific measures that ensure the maintenance and/or enhancement of the applicable conservation attributes consistent with the precautionary approach. These measures shall be

specifically included in the publicly available management plan summary.

9.3.a. Where the identification of HCVF attributes and areas is incomplete at the time of certification, forest owners or managers identify HCVF attributes and areas, develop a plan to maintain and/or enhance them, and begin implementation of the plan within one year of certification.

9.3.c. Stands and forests designated as HCVFs, which have been entered for timber harvest, are managed over the long term to assure that both the quality of their HCVF attributes and their area are maintained.

9.3.d. Forest owners and managers of HCVFs (forests and/or stands) coordinate conservation efforts with owners and managers of other HCVFs within their landscape.

9.4. Annual monitoring shall be conducted to assess the effectiveness of the measures employed to maintain or enhance the applicable conservation attributes.

Applicability note: Except where HCV attributes change rapidly or demonstrate ecological instability, annual monitoring may be informal and may be combined with other field activities. Attributes and locations that are highly vulnerable (e.g., small and/or unstable populations) and those that are intensively managed are monitored formally on an annual basis.

PRINCIPLE #10: PLANTATIONS

Plantations shall be planned and managed in accordance with Principles and Criteria 1 - 9, and Principle 10 and its Criteria. While plantations can provide an array of social and economic benefits, and can contribute to satisfying the world's needs for forest products, they should complement the management of, reduce pressures on, and promote the restoration and conservation of natural forests.

Applicability note: Plantations, as defined for the Pacific Coast Region, are tree-dominated areas substantially lacking in natural forest attributes (e.g. structure and species composition native to the area) that usually require human intervention in order to be maintained. A "planted forest" is not necessarily a "plantation" since it may be part of a management regime that maintains most natural forest attributes indigenous to the area. The following characteristics contribute to a management regime being considered plantation forestry and the land managed being classified a plantation:

- *cultivation of exotic species*
- *use of even-aged silviculture for forest types that do not regenerate naturally through stand-replacing events*
- *use of even-aged silviculture with rotations less than 50 years*
- *use of even-aged regeneration units that lack retention, and that are larger than those specified under criterion 6.3.*
- *systematic use of, and reliance on, chemical herbicides, pesticides, and fertilizers*
- *single-species plantings on sites normally occupied by multiple-species forests*
- *regular, periodic stand treatments intended to eliminate natural-in-growth of native trees and associated ground cover*

The determination of whether the FMU is a plantation operation or an individual stand within it is a plantation is made on the basis of the overall forest-management regime and the resulting conditions at the stand- and FMU-level.

Note: Regarding the Applicability of P1-9 to Plantation Forest Operations: For the proportion of the FMU being maintained in plantation management per 10.5.b, it is not expected that the management of the stands maintains or restores all levels of structure and composition associated with natural forests. Accordingly, some components of the first nine Principles and Criteria either do not apply or require modified interpretation when being applied to plantation forest operations. For the Pacific Coast region, indicators that do not apply to plantation forest stands are 6.3.e.4, 6.3.e.5, 6.3.f.3, and 6.3.f.4. Those that may require modification in interpretation, particularly for plantations located on agricultural soils, are 6.3.e.1, 6.3.e.2, 6.3.e.3, 6.3.f.2, 6.3.f.3, and 7.1.d.2. All other provisions of Principles 1-9 are equally relevant to natural forest and plantation forest operations.

10.1. The management objectives of the plantation, including natural forest conservation and restoration objectives, shall be explicitly stated in the management plan, and clearly demonstrated in the implementation of the plan.

10.1.a. The objectives for and management of plantations are described in the forest management plan.

10.1.b. The management plan explains how plantation stands, areas of natural forest management, including areas of long-rotations, areas of late-seral stages (*see 10.5.a*), and other set-asides (*see 6.3.e applicability note*), relate to one another in the landscape.

10.1.c. The plantation management plan is consistent with existing regional forest conservation and landscape plans (*see also 10.5.e*).

10.2. The design and layout of plantations should promote the protection, restoration, and conservation of natural forests, and not increase pressures on natural forests. Wildlife corridors, streamside zones, and a mosaic of stands of different ages and rotation periods, shall be used in the layout of the plantation, consistent with the scale of the operation. The scale and layout of plantation blocks shall be consistent with the patterns of forest stands found within the natural landscape.

10.2.a. For plantations on soils capable of supporting natural forests, the average harvest opening is 40 acres or less, with a maximum opening of 80 acres (*see 6.3.f.4, which establishes limits for openings in natural forest management*).

10.2.b. Regeneration in previously harvested areas reaches a mean height of at least ten feet or achieves canopy closure (*see Glossary*) before adjacent areas are harvested.

10.2.c. The cumulative ecological impact of the extent, distribution, and configuration of plantation stands across the landscape is assessed and considered in the selection and layout of plantation management units within the FMU.

10.2.d. For FMUs larger than 1000 acres with plantation management, areas maintained in or restored to natural forest cover are chosen through a landscape analysis, in accordance with 10.5.b. The analysis considers:

- 1) providing mature forest conditions and other ecological attributes that may be under-represented across the forest landscape,
- 2) implementing regional, state, and landscape-level forest ecosystem and native fish and wildlife habitat conservation and restoration plans and objectives,
- 3) creating conservation zones that provide adequate interior forest habitat for native species,
- 4) protecting rare and/or poorly protected plant community types; existing natural forest stands; and refugia for rare (*see Glossary*) aquatic or terrestrial species. (See also 6.1.a.)

10.2.e. Aesthetic factors are incorporated in plantation layout and design.

10.3. Diversity in the composition of plantations is preferred, so as to enhance economic, ecological, and social stability. Such diversity may include the size and spatial distribution of management units within the landscape, number and genetic composition of species, age classes, and structures.

10.3.a. For plantations on soils capable of supporting natural forests, plantation stands are managed to create and maintain structural and species diversity that results in high quality early- and mid-successional wildlife habitat.

For example:

- *Thinnings provide light to the forest floor to enhance understory species diversity.*
- *Coarse woody debris and snags are retained and/or recruited.*
- *Islands of vegetation and advanced regeneration are retained, and are spatially arranged to provide lifeboat functions for wildlife and plant species.*
- *In selected areas, understory vegetation is retained and allowed to develop.*

10.3.b. All plantations are managed to assure long-term soil maintenance and replenishment.

10.3.c. Genetic diversity is maintained as a buffer against pests and extreme environmental conditions.

10.3.d. For plantations on soils capable of supporting natural forests, a minimum average of four dominant and/or co-dominant trees and two snags per acre are retained. Where sufficient snags do not exist, they are recruited

10.4. The selection of species for planting shall be based on their overall suitability for the site and their appropriateness to the management objectives. In order to

enhance the conservation of biological diversity, native species are preferred over exotic species in the establishment of plantations and the restoration of degraded ecosystems. Exotic species, which shall be use only when their performance is greater than that of native species, shall be carefully monitored to detect unusual mortality, disease, or insect outbreaks and adverse ecological impacts.

10.4.a. Species native to the site are planted on soils capable of supporting natural forests.

10.4.b. On forest soils, multiple tree species are used.

10.5. A proportion of the overall forest management area, appropriate to the scale of the plantation and to be determined in regional standards, shall be managed so as to restore the site to a natural forest cover.

10.5.a. In plantations on forest soils, a percentage of the FMU is managed to maintain and/or restore natural forest vegetation and structure in accordance with the table below:

Note: All percentages are of the total FMU.

	<i>Maximum % in Plantation</i>	<i>Minimum % in Natural Forest</i>		
		<i>TOTAL</i>	<i>In long rotation*</i>	<i>In late seral**</i>
for FMUs of 100 - 1,000 acres	70 %	30%	18%	12%
for FMUs 1,001 to 10,000 acres	60 %	40%	24%	16%
for FMUs > 10,000 acres	50 %	50%	30%	20%

The FMU is divided into two categories: plantations and natural forests. Natural forests are divided into areas designated for long-rotation* management and areas designated for management for late seral conditions**. At least forty percent of the minimum required natural forest areas above are maintained in and/or restored to late seral conditions. The remainder of these natural forest areas are managed on long rotations (i.e., 80 years or longer west of the Cascade Range, and 120 years or longer east of the Cascade Range; but short-lived species, such as lodgepole pine, may require a shorter rotation than recommended above). Those portions of the natural forest that are managed under uneven-aged silviculture have similar target ages (as noted above for even-aged management) for crop trees. Both circumstances fully meet, at the earliest possible time, all aspects of P&C 1-9 that are relevant to natural forests for the area. FMUs within the same ecoregion that are 100 acres or larger and that are part of ownerships greater than 10,000 acres within the Pacific Coast region provide the percentage of natural forest areas expected of FMUs greater than 10,000 acres.

Where the landscape analyses conducted according to 10.2.e. indicates that forest areas outside the FMU are a higher priority for conservation and/or restoration than are

areas within the FMU, forest managers may secure cooperative conservation agreements for those areas, and count them towards the requirements of 10.5.b. To be eligible, the areas outside the FMU must be within the same forest type and the same ownership type as the FMU (i.e., public versus private).

Examples of eligible conservation agreements include:

- *purchase of conservation easements*
- *purchase of fee title*

10.5.b. The plantation management plan delineates natural forest and restoration areas in accordance with the proportions in 10.5.a.

10.5.c. Plantations on forest soils on public lands are managed to restore and maintain natural forest vegetation, structure, function, and habitats, and fully meet, at the earliest possible time, all aspects of P&C 1-9 that are relevant to natural forests for the area.

10.5.c. In plantations on agricultural soils, at least 10% of the plantation area is restored to the ecosystem native to the site.

10.5.d. Forest owners and managers assure that natural forest and conservation areas provided by 10.5.b are maintained over time.

For example, conservation easements, deed restrictions, transfers to conservation organizations, and other tools are used.

10.6. Measures shall be taken to maintain or improve soil structure, fertility, and biological activity. The techniques and rate of harvesting, road and trail construction and maintenance, and the choice of species shall not result in long-term soil degradation or adverse impacts on water quality, quantity, or substantial deviation from stream course drainage patterns. (see criterion 6.5. and its indicators.)

10.6.a. Sufficient woody debris is retained within plantation stands to assure adequate nutrient recycling.

10.7. Measures shall be taken to prevent and minimize outbreaks of pests, diseases, fire, and invasive plant introductions. Integrated pest management shall form an essential part of the management plan, with primary reliance on prevention and biological control methods rather than chemical pesticides and fertilizers. Plantation management should make every effort to move away from chemical pesticides and fertilizers, including their use in nurseries. The use of chemicals is also covered in Criteria 6.6 and 6.7.

Note: The Working Group considers this criterion sufficiently explicit and measurable. Indicators are not required.

10.8. Appropriate to the scale and diversity of the operation, monitoring of plantations shall include regular assessments of potential on-site and off-site ecological and social impacts (e.g., natural regeneration, effects on water resources

and soil fertility, and impacts on local welfare and social well-being), in addition to those elements addressed in principles 8, 6, and 4. No species should be planted on a large scale until local trials and/or experience have shown that they are ecologically well-adapted to the site, are not invasive, and do not have significant negative ecological impacts on other ecosystems. Special attention will be paid to social issues of land acquisition for plantations, especially the protection of local rights of ownership, use or access.

10.8.a. Exotic tree species are not used in plantations on soils capable of supporting natural forests.

10.8.b. On former agricultural lands, the use of exotic plant species (*see Glossary*) is contingent on credible scientific analysis (*see Glossary*) that the species is non-invasive and does not diminish off-site native biodiversity. If non-invasive exotic plant species are used, their provenance and the location of their use are documented, and their ecological effects are actively monitored.

10.8.c. Potentially invasive species of exotic plants are not used (*see also 6.9.a.*).

10.9. Plantations established in areas converted from natural forests after November 1994 normally shall not qualify for certification. Certification may be allowed in circumstances where sufficient evidence is submitted to the certification body that the manager/owner is not responsible directly or indirectly for such conversion.

Note: The Working Group considers this criterion sufficiently explicit and measurable. Indicators are not required.

STANDARDS for NON-TIMBER FOREST PRODUCTS

Because of the importance of non-timber forest products (NTFPs) in the Pacific Coast regional economy, these standards provide the following guidance for assessing forest management on those lands where NTFPs will be harvested (with or without associated timber harvest). NTFPs in this region are to be managed in accordance with Principles and Criteria 1- 9 and the following provisions.

Harvest of NTFPs usually have lower impacts on the forest ecosystem than timber harvesting; can provide an array of social and economic benefits, particularly to community operations; and can therefore be an important component of forest ecosystem management. NTFPs require special management and monitoring in order to ensure the long-term viability of species and to minimize adverse social and ecological impacts.

Definition: NTFPs are biotic products other than timber harvested from forests for subsistence and/or for trade. NTFPs may come from primary and natural forests, and from secondary forests.

1. The management plan must identify and provide specific guidelines for each NTFP species or species group that is considered for commercial harvest, and identify the most important NTFPs for subsistence use.
 - a. If commercial and/or subsistence NTFP harvesting occurs, the management plan includes an inventory and harvesting protocols that considers the relationship between activities for wood products and non-timber resources.
2. Management plans, operational activities, and monitoring ensure long-term ecological viability of NTFP populations harvested for commercial and/or subsistence use. Management systems address the ecological processes of, and implement activities to minimize the ecological impacts of harvesting on various types of NTFPs, including, but not limited to:
 - products that require the removal of an individual
 - products that affect a species' growth or productivity
 - products that, when harvested, cause damage to trees or other forest products
 - products critical to nutrient cycling
 - products with high wildlife value
 - products with specific ecological interdependencies
 - products harvested for subsistence use
 - a. Harvest of NTFPs minimizes negative cumulative impacts on forest structure, function, and/or components.
3. Management plans that prioritize timber production include specific provisions to describe and minimize short- and long-term impacts on NTFPs harvested for commercial and/or subsistence use.

4. The management plan addresses the social and economic impacts of NTFP management, including subsistence utilization and traditional harvesting practices, and respects the cultural and religious significance of NTFPs to local and indigenous communities.
5. The methods use to harvest NTFP, and the levels harvested are appropriate to the species or species group, and reflect scientific, local, and/or indigenous knowledge.
6. Monitoring the timber harvest includes an evaluation of the impacts on non-timber resources harvested for commercial and/or subsistence use and the forest ecosystem. Monitoring includes the impacts of non-timber forest products on timber resources.
7. In addition to Criterion 3.4, indigenous and local communities receive fair and adequate benefits from any use of their name or image in marketing. Whenever local or indigenous knowledge is the basis of an NTFP-related patent, the affected community receives fair and adequate remuneration.

GLOSSARY for the Pacific Coast region

Biological rotation: The rotation length that approximates minimum biological maturity of trees and even-aged stands, and maximizes the physical volume of wood production over time (Culmination of mean annual increment is used as a rough proxy for biological rotation age here).

Catastrophic natural disturbances: The natural events that occur infrequently (i.e., on a time scale of decades or centuries), and that significantly alter the forest at the landscape level.

Category A stream: A stream that flows year-around and/or supports populations of fish.

Category B stream: A stream that does not run year-around, but has sufficient water to host populations of non-fish, aquatic species.

Category C stream: A stream that flows only after periods of rain and melting snow, but which does not support populations of aquatic species.

Conversion: Modifications of the physiognomy, biodiversity, structure, and dynamics of a forest that are produced by management activities or non-forest land uses, which result in a significant reduction in biodiversity or other measures of forest complexity over time. Conversions include, but are not limited to, the creation of non-forested areas on forest sites. (Note: this is the definition that was most recently proposed by the FSC working group on conversions.)

Credible scientific analyses: are defined as scientific opinions supported by data and explanations in articles published in peer-reviewed professional journals that deal with the natural or social sciences and judged to be relevant to the matter in question. Scientific credibility, as it applies to this criterion, is, based on a body of scientific work and on the judgment of experienced professionals.

Culmination of mean annual increment (CMAI): The peak average yearly growth in volume of trees or a forest stand, calculated by dividing the total volume by the age of the stand.

Down woody debris: Wood from fallen trees or branches that lie on the forest floor, where it provides important microhabitats and performs the various functions of nutrient cycling. Commonly categorized as large and/or coarse or fine woody debris.

Ecological rotation: The rotation length at which a stand begins to approximate the full ecological functions of a native stand. Definitions of old-growth ages are used here as indicators of ecological rotation length.

Economic rotation: The rotation length that maximizes the financial gain (net present value) associated with timber management. Economic rotations are shorter than either biological or ecological rotations.

Evaluation unit: The portion of an ownership in which forest management planning and operations are being evaluated through third-party certification.

Even-aged management: A set of silvicultural systems oriented toward harvesting and regenerating new stands of trees of uniform age on a periodic basis, employing one or more harvest entries. Clear-cutting, seed-tree, and shelterwood systems are even-aged management systems. Some modified forms of even-aged management are certifiable under these standards, while many traditional even-aged management practices are not.

Forest management unit (FMU): A unit of forest under a certificate, including areas used for timber harvest, for harvest of non-timber forest products, and all non-extractive 'set aside' areas. In large forests, the FMU may be a district, which is part of the total ownership. In smaller forests, the FMU is usually the entire forest.

Heritage trees: Old-growth trees that are vestiges of an original, pre-management stand or forest. Protection of heritage trees may provide important ecological functions in a stand, forest, or landscape that has been converted to secondary forest.

Indigenous peoples: Recognized members of American Indian tribes by those particular tribes. American Indian, or Native American, tribes are understood in this document as American Indian tribes, nations, or bands, and may include groups that have not been officially recognized by the Federal government. Members may include persons who have either married into or been adopted by American Indian families.

Intensive forestry: 1) The use of silvicultural practices, such as vegetation control by mechanical or chemical means, fertilization, and density control, to obtain a high volume of wood fiber of a selected type per unit of area. 2) Repeated harvest of a large percentage of trees within harvest units and/or across the larger forest management unit, within a short time frame relative to the potential life span of the tree species being managed. 3) Management actions that significantly alter or eliminate the structure, composition, and biologic process normally found in natural stands

Interior habitat: An area within a forest characterized by a micro-climate distinct from that outside the forest and/or characterized by the relative absence of biophysical phenomena and biotic communities associated with forest edges and exteriors.

Invasive species: A species capable of rapid reproduction and spatial expansion, which may displace more specialized native species and/or is difficult to eradicate. Invasive species are of particular ecological concern if they are exotic to the area in question.

Late successional: Forest in old-growth or mature seral stages.

Long-term retention: Retention is considered to be long term if it lasts for one rotation or longer

Management unit: A unit of forestland that has been defined, usually by the landowner, to facilitate forest management planning and operations. Management units are often subsets of individual ownerships and evaluation units.

Mature seral stage: Forest stands that have surpassed the culmination of mean annual increment, where height growth is slowing, crowns are expanding, and stand diversity is increasing. Hiding cover, thermal cover, and some forage may be present.

Natural: Forest conditions, biological diversity, and ecosystem functions, both on a site-specific and landscape scale, as they could have been expected to occur prior to European settlement. Natural forests include most or all of their expected plant and animal species, forest structure, and ecosystem processes, given their location, site characteristics, and disturbance and/or successional history. This definition recognizes that forest conditions do not remain static over long periods of time and that American Indians often modified forest conditions prior to European settlement. Areas most heavily managed or impacted by American Indians should not be used as a baseline for determining natural conditions.

Natural forests (defined by FSC): Forest areas wherein most of the principal characteristics and key elements of native ecosystems, such as complexity, structure, and diversity are present, as defined by FSC-approved national and regional standards of forest management.

Non-catastrophic natural disturbances: Natural events that occur more frequently than catastrophic disturbances at the gap or stand level

Old-growth: The oldest seral stage in which a plant community is capable of existing on a site, given the frequency of natural disturbance events. In forests of the Pacific region, old growth often begins around 200 to 250 years of age and continues until a stand replacing event takes place. Depending on the frequency and intensity of disturbances, and site conditions, old-growth forest will have different structures, species compositions, and age distributions, and functional capacities than younger forests.

Ownership: All forest lands held by an individual, business, or other entity, including subsidiaries or other closely held entities, as well as forest lands held by any parent companies and their closely held entities.

Percent of inventory: See "Volume control," see below.

Plantation (defined by FSC A.C.): A tree-dominated vegetated area in which human intervention, through planting or intensive silvicultural treatments, has yielded conditions in which only a few of the characteristics of the indigenous natural forest ecosystem remain.

Plantation: A tree-dominated area that is substantially lacking in natural forest attributes (e.g., structure and species composition native to the area) and that usually requires regular human intervention. A "planted forest" is not necessarily a "plantation," since it may attain natural forest attributes. In the Pacific Coast region, any of the following characteristics may indicate that a forest is a conventional plantation (though not necessarily one that is certifiable):

- cultivation of exotic species

- use of even-aged silviculture for forest types that do not regenerate naturally through stand-replacing events
- use of even-aged silviculture with rotations of less than 50 years
- use of even-aged regeneration units larger than those specified under criterion 6.3.e.
- systematic use of and reliance on chemical herbicides, pesticides, and fertilizers
- single-species plantings on sites normally occupied by multiple-species forests
- regular, periodic stand treatments intended to eliminate natural in-growth of native trees and associated ground vegetation

Primary forest (defined by FSC A.C.): An ecosystem characterized by an abundance of mature trees, relatively undisturbed by human activity. Human impacts in such forest areas have normally been limited to low levels of hunting; fishing; harvesting of forest products; and, in some cases, to low density, shifting agriculture with prolonged fallow periods. Such ecosystems are also referred to as "mature," "old-growth" or "virgin" forests. (further details will be addressed by FSC-approved national and regional standards of forest management).

Primary forest (defined by Pacific Coast Working Group): In addition to the FSC P&C's definition of primary forests, they are defined as natural forests of any age that arise through natural regeneration following natural disturbance. Primary forests have not been commercially logged or otherwise significantly altered by industrial society. Should this definition conflict with the definition used by the FSC P&C, this definition shall rule.

Rare plant community: A plant community that is listed as G1 – G3, N1 – N3, or S1 – S3 by sources such as NatureServe (<http://www.natureserve.org>), or Natural Heritage databases (Noss et al. 1995)⁴ as vulnerable, imperiled, or critically imperiled.

Rare species: Species that are federally-listed, state-listed, as threatened, endangered, or sensitive; vulnerable, imperiled, or critically imperiled (i.e., G1 – G3, N1 – N3, or S1 – S3) on Natural Heritage/NatureServe lists; as well as those listed as rare by state Native Plant Societies

Rotation length: The interval of time between one regeneration harvest and the next regeneration harvest. The stand age and the rotation length are the same if new trees are successfully established the same year that the existing stand is harvested. Rotations are associated with even-aged management.

Secondary forests (defined by FSC A.C.): The ecosystems that regenerate from a substantial disturbance (flood, fire, land clearing, or extensive and intensive logging) and are characterized by a scarcity of mature trees, an abundance of pioneer species, and a dense understory of saplings and herbaceous plants. Although secondary forests frequently peak in terms of accumulated biomass well within one felling cycle, the transition to primary forests, which depends on the severity of the original disturbance,

⁴Noss, R.F., E.T. LaRoe, and J.M. Scott. 1995. Endangered ecosystems of the United States: a preliminary assessment of loss and degradation. Washington, DC: Biological Report 28. USDI National Biological Service.

usually requires several rotation lengths. Irreversible transformation of the underlying soil and nutrient cycle brought about by chronic or intense use may render it impossible for the original, primary forest type to return. (further details will be addressed by FSC-approved national and regional standards of forest management.)

Secondary forest (defined by the Pacific Coast Working Group): Secondary forests are defined as forests that regenerated naturally or with minor artificial regeneration on sites that were significantly altered by human intervention, which include logging, farming, or grazing. Should this definition conflict with the definition used by the FSC P&C, this definition shall rule.

Short-term retention: Short-term retention is that which lasts only until the next commercial entry

Snag: A standing dead tree. Snags provide important habitats for particular species (e.g., cavity-nesting birds).

Target age: The age of the oldest age-class of trees in uneven-aged management systems. The definitions of "economic," "biological," and "ecological" target ages are parallel to the definitions of the aforementioned rotation length, although the time required to attain these target ages may differ from those for the parallel rotations lengths due to differences in management systems.

Uneven-aged management: A set of silvicultural systems oriented toward harvesting and regenerating a forest in which tree ages vary at the stand level. Single-tree selection and some group selection systems are uneven-aged management systems.

Volume control: One of several methods of regulating the harvest of timber based on the volume and growth of the current or future forest inventory. The appropriate cut can be expressed as a percent of the standing inventory (POI), or in relation to the periodic volume increment.

GLOSSARY (from the FSC Principles and Criteria)

Words in this document that are not found in this glossary are used as defined in standard English language dictionaries. The precise meaning and local interpretation of certain phrases (such as local communities) should be decided in the local context by forest managers and certifiers. In this document, the words below are understood as follows:

Biological diversity: 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.

Chemicals: The range of fertilizers, insecticides, fungicides, and hormones that are used in forest management.

Criterion (pl. Criteria): A means of judging whether or not a Principle (of forest stewardship) has been fulfilled.

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

Ecosystem: A system of plants and animals and their physical environment, which function as an interdependent unit.

Endangered species: Any species that 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 integrity: The composition, dynamics, functions and structural attributes of a natural forest.

Forest management/manager: The people responsible for the operational management of the forest resource and of the enterprise, as well as the management system and structure, and the planning and field operations.

Genetically modified organisms: Biological organisms that have been induced by various means to consist of genetic structural changes.

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).

High Conservation Value Forests: High Conservation Value Forests are those that possess one or more of the following attributes:

- a) 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
- b) forest areas that are in or contain rare, threatened or endangered ecosystems
- c) forest areas that provide basic services of nature in critical situations (e.g. watershed protection, erosion control)
- d) 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).

Landscape: A geographical mosaic composed of interacting ecosystems resulting from the influence of geological, topographical, soil, climatic, biotic and human interactions in a given area.

Local laws: Includes all legal norms given by organisms of government whose jurisdiction is less than the national level, such as departmental, municipal and customary norms.

Long term: The time-scale of the forest owner or manager as manifested by the objectives of the management plan, the rate of harvesting, and the commitment to maintain permanent forest cover. The length of time involved will vary according to the context and ecological conditions, and will be a function of how long it takes a given ecosystem to recover its natural structure and composition following harvesting or disturbance, or to produce mature or primary conditions.

Native species: A species that occurs naturally in the region.

Natural cycles: Nutrient and mineral cycling as a result of interactions between soils, water, plants, and animals in forest environments that affect the ecological productivity of a given site.

Natural Forest: Forest areas where many of the principal characteristics and key elements of native ecosystems such as complexity, structure and diversity are present, as defined by FSC approved national and regional standards of forest management.

Non-timber 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.

Other forest types: Forest areas that do not fit the criteria for plantation or natural forests and which are defined more specifically by FSC-approved national and regional

standards of forest stewardship.

Plantation: Forest areas lacking most of the principal characteristics and key elements of native ecosystems as defined by FSC-approved national and regional standards of forest stewardship, which result from the human activities of either planting, sowing or intensive silvicultural treatments.

Principle: An essential rule or element; in FSC's case, of forest stewardship.

Silviculture: The art of 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.

Succession: Changes in species composition and forest community structures caused by natural processes (non-human) over time.

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 that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

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.

APPENDIX A. RELEVANT LAWS, TREATIES, AND AGREEMENTS. RELEVANT LAWS, TREATIES, AND AGREEMENTS

The following list of laws, treaties, agreements, and other policies are provided to facilitate use of the regional standards, including in relation to FSC Principle 1. While a reasonable effort has been made to be inclusive, the following lists should not be assumed to be exhaustive. The status of these laws and other policies are also subject to change over time. Landowners, certifiers, and other parties who are concerned with these and other policies should consult with the appropriate public agencies and private counsel. These lists neither constitute legal advice, nor obviate the need for landowners and certifiers to conduct their normal due diligence.

The lists provided below do not generally include regulations that have been written to implement these and other laws, nor do they include administrative orders, or court decisions and case law. While these regulations and decisions are as important as the treaties and laws listed below, it is not feasible to list them here. Local policies are also too numerous and varied to list here individually. Therefore, landowners, forest managers, certifiers, and other interested parties should contact the county offices for the counties in which they operate. The following lists do not include laws, regulations, and other policies that pertain specifically to the management of Federal lands, other public lands, or tribal lands held in trust by the Federal government.

International Treaties and Agreements to Which the U.S. is a Signatory:

- Agenda 21, United Nations Convention on Environment & Development (UNCED), Rio de Janeiro, 1992.
- Forest Principles, UNCED, 1992.
- Convention on Biological Diversity, UNCED, 1992. (The US has signed the Treaty, but Congress has not ratified the signature.)
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).
- Framework Convention on Climate Change, UNCED, 1992.
- Various treaties with American Indian Nations, Tribes, and Bands in Washington, Oregon, and California, particularly those which established off-reservation treaty rights. Relevant treaties may include:
 - The 1855 Stevens Treaties with the Yakama, Umatilla, Walla Walla, Cayuses, Warm Springs, Wasco, Paiute, and Nez Perce, and the 1854 Medicine Creek Treaty with the Nisqually and other Tribes in Washington and Oregon.
 - The 1864 Treaties with the Klamath, Modoc, and Yahooskin in Oregon and California.
 - Treaties with the Squaxin Island, Puyallup, Jamestown S'Kallam, Port Gamble S'Klallam, Lower Elwha S'Klallam, Skokomish, Swinomish, Sauk-Suiattle, Upper Skagit, Tulalip, Makah, Stillaguamish, Muckleshoot, Suquamish, Nooksack, Lummi, Quinalt, and Quilete Tribes in Washington.
 - Treaties with the Greenville Maidu, the Mooretown Maidu, Grindstone Creek Nomalaki-Wintu-Wailaki-Nuimok, Jackson Miwok, Lookout Miwok, Pit River Tribe, Redding Wintu/Pit River Tribe, and Montgomery Creek Madesi in California.

Federal Laws and Policies:

- Endangered Species Act.
- Migratory Bird Treaty Act.
- Lacey Act (concerning trade in illegally taken fish, wildlife, or plants).
- Federal Plant Pest Act and the Plant Quarantine Act.
- Coordinated Framework for the Regulation of Biotechnology, Office of Science & Technology, 19986.
- Federal Water Pollution Control Act/Clean Water Act.
- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)/Federal Environmental Pesticide Control Act (FEPCA).
- Resource Conservation & Recovery Act (RCRA), in relation to hazardous chemicals.
- Comprehensive Environmental Response, Compensation and Liability Act (CERCLA, commonly known as "Superfund").
- Clean Air Act.
- National Historic Preservation Act, including in relation to American Indian sites.
- Occupational Safety & Health Act.
- Federal policy on income taxes, capital gains taxes, inheritance taxes, reforestation tax credits, and other relevant taxes.
- Federal business practices law.

State Laws and Policies -- Washington:

- Washington Forest Practices Act.
- Washington fire practices policies.
- Washington Growth Management Act and other State land use policies.
- Washington wildlife law.
- Washington water quality protection policies, including policies and programs implementing the Federal Clean Water Act.
- Washington water resources law.
- Washington policies and programs implementing the Federal Clean Air Act.
- Washington policy on archaeological resources.
- State Environmental Quality Act.
- Washington tax policy, including policies for income taxes, forest land taxes (or, in some cases, open space land taxes), timber excise taxes (or, alternately, the real estate excise tax), and business and occupations taxes.
- Washington business practices law.

State Laws and Policies -- Oregon:

- Oregon Forest Practices Act.
- Oregon fire practices policies.
- Oregon wildlife law, including ORS chs. 496 and 498.

- Oregon land use law and policy, including ORS chs. 92 and 215 (including with regard to land partitions, subdivisions, and permitted land uses) and Oregon Statewide Planning Goals & Guidelines (including Goal 4, Forest Lands; Goal 5 Open Spaces, Scenic & Historic Areas, & Natural Resources; and Goal 6 Air, Water, & Land Resources Quality).
- Oregon water quality protection policies, including policies and programs implementing the Federal Clean Water Act.
- Oregon water resources law, including ORS ch. 537, the Oregon Water Rights Act.
- Oregon policies and programs implementing the Federal Clean Air Act.
- Oregon policy on archaeological resources and cultural sites, including Senate Bill 61, passed by the 1993 Legislature.
- Oregon tax policies, including policies for Income taxes, Personal Property taxes, the Forest Land and Severance Tax (or, alternately, the Western Oregon Small Tract Optional Tax), Timber Harvest taxes, Forest Protection District taxes, and Emergency Fire Protection Assessment.
- Oregon business practices law.

State Laws and Policies -- California:

- Z'berg - Nejedly Forest Practices Act.
- California fire practices policies.
- Timberland Productivity Act.
- California Wild & Scenic Rivers Act.
- California Endangered Species Act and Fish & Game Code.
- Natural Communities Conservation Planning Act.
- Porter-Cologne Water Quality Control Act and other California water quality policies, including those implementing the Federal Clean Water Act.
- California water resources policy, including the Water Code.
- California policies and programs implementing the Federal Clean Air Act.
- California Environmental Quality Act.
- California policy on archaeological sites and cultural resources.
- California tax policies, including policies for income taxes, timberland taxes, and timber yield taxes.
- California business practices law.

Local Policies -- Washington, Oregon, and California:

- County rules or guidelines regarding oak woodlands (particularly applicable to California).
- County land use policies, including general plans (or their functional equivalents) and zoning ordinances (or their functional equivalents)
- Regional (multi-county) land use policies (particularly relevant in Oregon).
- County building codes.
- County tax policies, including policies for income taxes, property taxes, and special assessment districts.

APPENDIX B. EXISTING STANDARDS.

Other standards applicable in the region:

Forest Stewardship Council. Principles and Criteria for Forest Management. March 1996, amended January 1999.

Pacific Certification Council. Certification Requirements/Region Specifications. April 1995 Draft.

Pacific Certification Council. Philosophy of PCC Certification Program. April 1995 Draft.

Pacific Certification Council. Standards for Ecologically Responsible Forest Use. Draft II, September 1996.

Pacific Certified Ecological Forest Products. Certification of Foresters for the PCEFP Process. Prepared by Fred Euphrat, Forest Soil Water, Inc. July 1995 Draft.

Pacific Certified Ecological Forest Products. Evaluation Checklist. 1994.

Pacific Certified Ecological Forest Products. Landowner and Forester Handbook. 1994.

Rainforest Alliance Smartwood Certification Program. Generic Guidelines for Assessing Natural Forest Management. October 1993 Revised Draft.

Rainforest Alliance Smartwood Certification Program. Generic Guidelines for Assessing Forest Plantations. October 1993 Revised Draft.

Rainforest Alliance Smartwood Certification Program. Guidelines for Assessing Forests in Washington.

Rogue Institute for Ecology & Economy. Philosophy of Community Forestry. October 1994.

Scientific Certification Systems. Forest Conservation Program Description & Operations Manual. October 1995.

Scientific Certification Systems. Regionalization of the Forest Conservation Program Evaluation Process: Criteria and Weights, Evaluators, and Peer Reviewers Used in the Evaluation of Big Creek Lumber Company, California. 1996.

Scientific Certification Systems. Standards of Exemplary Forest Management for Small Landowners. Prepared by Robert Hrubes & Associates. March 1996.

Other standards:

IMAFLORA. Standards for NonTimber Forest Products Certification, the Case of Castanha-Do-Brasil and Rubber. August 1995 Version 2.0.

Sigurd Olsen Institute & Smart Wood Certification Program. Lake States Regional Guidelines for Assessing Natural Forest Management. February 1994 Draft.

Silva Forest Foundation. Standards for Ecologically-Responsible Forest Use.

**APPENDIX C. SOURCES OF INFORMATION ON INDIGENOUS LAND
TENURE AND SITES**

- Local and Regional Offices of the Bureau of Indian Affairs
- Local and Regional Offices of the USFS and BLM
- State Historical Preservation Offices
- Historical Records and other Literature

In California:

- California Department of Forestry and Fire Protection
- California Indian Assistance Program
- Dept. of Housing and Community Development

In Washington:

- Office of Archeology and Historic Preservation
- Department of Natural Resources, Forest Practices Division and Tribal Liaison

In Oregon:

- Oregon Department of Forestry
- State Office of Historic Preservation

APPENDIX D. LIST OF FOREST ECOSYSTEM TYPES

The following list, drawn from Noss (1997)⁵, contains Pacific Coast region forest communities of high conservation concern, either because they have declined greatly in extent or quality since European settlement or because they are extremely rare for other reasons. Forest communities are grouped by ecoregion, as recognized by the World Wildlife Fund. The WWF biological distinctiveness and conservation status ("snapshot assessment 1996, modified by threat") rankings are given for each ecoregion. Data on status of forest communities are from a review of endangered ecosystems in the U.S. published by the National Biological Service (NBS) (Noss et al. 1995 -- See footnote 2), a compilation of rare plant communities in the U.S. published by The Nature Conservancy (TNC) (Grossman et al. 1994)⁶, and other sources. Forest communities qualify for the list below if they have declined in area by at least 70% since European settlement, have been severely degraded in quality over at least 70% of their original area, or the community is ranked as critically imperiled (G1) or imperiled (G2) globally by TNC. The status of each community, according to TNC or NBS, is given. For NBS status, CE = critically endangered (>98% decline), E = endangered (85-98% decline), and T = threatened (70-84% decline).

This list is one resource to guide forest managers as they determine the conservation value of a forest. Other resources may include data and lists that have been generated by researchers, local native plant societies, and experts, and other NGOs and governmental agencies.

California Montane Chaparral and Woodlands (#71)
Biological Distinctiveness Value: Globally Outstanding
Conservation Status: Vulnerable
Old-growth and primary forests of all types (E)
Santa Lucia Fir Forest (G2Q)
California Walnut Forest (G2Q)
Bishop Pine Forest (G2Q)
Monterey Pine Forest (G1Q)
Bigcone Douglas-fir Forest (G2Q)
Tecate Cypress Woodland (G1Q)
Gowen Cypress Woodland (G1Q)
Monterey Cypress Woodland (G1Q)
Piute Cypress Woodland (G2Q)
Sargent Cypress Woodland (G2Q)
All native riparian forests (T)

California Coastal Sage and Chaparral (#72)
Biological Distinctiveness Value: Globally Outstanding
Conservation Status: N/A

⁵Noss, R.F. 1997. A big-picture approach to forest certification: A report for the World Wildlife Fund's Forests for Life campaign in North America. Corvallis, OR: Conservation Biology Institute.

⁶Grossman, D.H., K.L. Goodin, and C.L. Ruess. 1994. Rare plant communities of the conterminous United States: An initial survey. Arlington, VA: The Nature Conservancy.

California Walnut Forest (G2Q)
Catalina Ironwood Forest (G2Q)
Bishop Pine Forest (G2Q)
Lyon Cherry Forest (G2Q)
Bigcone Douglas-fir Forest (G2Q)
Island Oak Forest (G1Q)
Tecate Cypress Woodland (G1Q)
Cuyamaca Cypress Woodland (G1G2Q)
Torrey Pine Woodland (G1Q)
All woodland on Santa Catalina Island (T)
All native riparian forests (T)

Sierra Nevada Forests (#41)
Biological Distinctiveness Value: Globally Outstanding
Conservation Status: Endangered
Old-growth and primary forests of all types (E)
Baker Cypress Forest (G2Q)
Giant Sequoia Forest (G2Q)
Piute Cypress Woodland (G2Q)
Washoe Pine Woodland (G1Q)
Mature, native riparian forests of all types (T)

California Interior Chaparral and Woodlands (#70)
Biological Distinctiveness Value: Globally Outstanding
Conservation Status: Vulnerable
Old-growth and primary forests of all types (E)
Mature and old-growth Coastal Redwood stands (E)(this item has been modified from the original database)
McNab Cypress Forest (G2Q)
Bishop Pine Forest (G2Q)
Monterey Pine Forest (G1Q)
Valley Oak Forest (G2Q)
Santa Cruz Cypress Woodland (G1Q)
Sargent Cypress Woodland (G2Q)
Hinds Walnut Woodland (G1Q)
All native riparian forests (T)

Northern California Coastal Forests (#40)
Biological Distinctiveness Value: Globally Outstanding
Conservation Status: Critical
Old-growth and primary forests of all types (E)
Mature and old-growth Coastal Redwood stands (E)
Bishop Pine Forest (G2Q)
Santa Cruz Cypress Woodland (G1Q)
Pygmy Cypress Woodland (G2Q)
Sargent Cypress Woodland (G2Q)
Mature, native riparian forests of all types (T)

Klamath-Siskiyou Forests (#39)

Biological Distinctiveness Value: Globally Outstanding

Conservation Status: Endangered

Old-growth and primary forests of all types (E)

White Fir-Port Orford Cedar/(Oregon Grape)/Vanillaleaf Forest (G2)

White Fir-Port Orford Cedar/Sadler Oak-Leucothe-Rhododendron Forest (G2)

Port Orford Cedar-Douglas-fir/Tanoak-Salal Forest (G2)

Port Orford Cedar-Douglas-fir/Rhododendron/Beargrass Forest (G2)

Port Orford Cedar-Western Hemlock/Salal-Rhododendron Forest (G2)

Port Orford Cedar-Western Hemlock/Swordfern Forest (G2)

White Fir-Port Orford Cedar-Brewer Spruce/Huckleberry Oak Forest (G1)

White Fir-Brewer Spruce/Pipsissewa Forest (G2)

White Fir-Brewer Spruce/Thin-leaved Huckleberry/Rattlesnake Plantain Forest(G2)

Oregon White Oak/Buckbrush/Idaho Fescue Woodland (G2)

Mature, native riparian forests of all types (T)

Eastern Cascades Forests (#37)

Biological Distinctiveness Value: Bioregionally Outstanding

Conservation Status: Endangered

Old-growth and primary forests of all types (E)

Grand Fir/Chinkapin Forest (G2)

Baker Cypress Forest (G2Q)

Mountain Alder-Black Cottonwood/Willow/Sedge Forest (G1)

Western Redcedar/Vanillaleaf Forest (G2)

Western Redcedar/Twinflower Forest (G2)

Ponderosa Pine/Pinegrass Woodland (G2)

Ponderosa Pine-Douglas-fir/Pinemat Manzanita Woodland (G2)

Ponderosa Pine-Oregon White Oak/Arrowleaf Balsamroot Woodland (G2)

Washoe Pine Woodland (G1Q)

Oregon White Oak/Idaho Fescue Woodland (G1?)

Mature, native riparian forests of all types (T)

Central and Southern Cascades Forests (#36)

Biological Distinctiveness Value: Bioregionally Outstanding

Conservation Status: Vulnerable

Old-growth and primary forests of all types (E)

Western Red cedar-Western Hemlock/Oregon Oxalis Forest (G2)

Western Hemlock/Skunk-Cabbage Forest (G2)

Mature, native riparian forests of all types (T)

Blue Mountains Forests (#38)

Biological Distinctiveness Value: Bioregionally Outstanding

Conservation Status: Endangered

Old-growth and primary forests of all types (E)

Grand Fir/Western Goldthread Forest (G2)

Grand Fir/Pacific Yew Forest (G2)

Grand Fir/Dwarf Huckleberry Forest (G2)

White Alder/River Birch Forest (G1)
White Alder/Mock Orange Forest (G1)
White Alder/Woods Rose Forest (G1)
Black Cottonwood/Douglas Hawthorn Forest (G1)
Ponderosa Pine/Pinegrass Woodland (G2)
Ponderosa Pine/Douglas Hawthorn Woodland (G1)
Western Juniper/Curlleaf Mountain Mahogany/Elk Sedge Sparse Woodland (G2)
Ponderosa Pine-Douglas-fir Riparian Sparse Woodland (G1)
Mature, native riparian forests of all types (T)

Central Pacific Coastal Forests (#34)
Biological Distinctiveness Value: Globally Outstanding
Conservation Status: Endangered
Old-growth and primary forests of all types (E)
Grand Fir-Sitka Spruce/Salal/Swordfern Forest (G2)
Douglas-fir/Baldhip Rose-Oceanspray Forest (G2)
Western Hemlock/Skunk-Cabbage Forest (G2)
Western Hemlock/Beargrass Forest (G2)
Shore Pine/Salal-Rhododendron-Evergreen Huckleberry Woodland (G1)
Mature, native riparian forests of all types (T)

Willamette Valley Forests (#6)
Biological Distinctiveness Value: Bioregionally Outstanding
Conservation Status: N/A
Old-growth and primary forests of all types (E)
Oregon White Oak/Fescue Sparse Woodland (G1)
Mature, native riparian forests of all types (T)

Puget Lowland Forests (#35)
Biological Distinctiveness Value: Nationally Important
Conservation Status: Critical
Old-growth and primary forests of all types (E)
Douglas-fir-Pacific Madrone/Creambush Oceanspray/Hairy Honeysuckle Forest (G1)
Douglas-fir/Salal-Creambush Oceanspray Forest (G2)
Douglas-fir/Common Snowberry-Creambush Oceanspray Forest (G1)
Western Redcedar-Grand Fir/Swordfern Forest (G1)
Western Redcedar/Salal Forest (G1)
Western Hemlock/Skunk-Cabbage Forest (G2)
Mature, native riparian forests of all types (T)

Cascade Mountains Leeward Forests (#32)
Biological Distinctiveness Value: Nationally Important
Conservation Status: Relatively Stable
Old-growth and primary forests of all types (on U.S. side) (E)
Grand Fir/Pinemat Manzanita Forest (G2)
Ponderosa Pine/Podfern Woodland (G1)
Douglas-fir/Podfern Woodland (G2)
Oregon White Oak/Elk Sedge Woodland (G2)

Mature, native riparian forests of all types (T)

APPENDIX E. SOURCES OF INFORMATION ON OLD-GROWTH and DEFINITIONS

Bingham, B.B. and J.O. Sawyer, 1991. Distinctive Features and Definitions of Young, Mature, and Old-Growth Douglas-Fir/Hardwood Forests. In *Wildlife and Vegetation of Unmanaged Douglas-Fir Forests*, General Technical Report PNW-GTR-285. Portland, OR: USDA Forest Service.

Franklin, J.F. and T.A. Spies, 1991. Ecological Definitions of Old-Growth Douglas-Fir Forests. In *Wildlife and Vegetation of Unmanaged Douglas-Fir Forests*, General Technical Report PNW-GTR-285. Portland, OR: USDA Forest Service.

Franklin, J.F. and J. Fites-Kaufmann, 1996. Assessment of Late Successional Forests for the Sierra Nevada. In *Sierra Nevada Ecosystem Project: Final Report to Congress*, Vol. II. Davis, CA: University of California, Centers for Water and Wildland Resources.

Marcot, B.G., R.S. Holthausen, J. Teply, and J. Carrier, 1991. In *Wildlife and Vegetation of Unmanaged Douglas-Fir Forests*, General Technical Report PNW-GTR-285. Portland, OR: USDA Forest Service.

USDA Forest Service, Pacific Northwest Research Station (J.F. Franklin, Task Group Chairman), 1986. *Interim Definitions for Old-Growth Douglas-Fir and Mixed-Conifer Forests in the Pacific Northwest and California*. Research Note PNW-447. Portland, OR: USDA Forest Service.

APPENDIX F. ILLUSTRATIVE FRAMEWORK OF STREAM QUALITY INDICATORS

The attached table, from the National Marine Fisheries Service (See footnote 4), is included for illustrative purposes only. It is not a checklist of measurements that must be taken to satisfy certification requirements, nor are its quantitative thresholds intended to trigger any particular management actions. It is included here as a resource for forest managers, which may be used to help assess stream habitat quality for anadromous fish.

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APPENDIX G. ILLUSTRATIVE* INTEGRATED ECOSYSTEM MONITORING FRAMEWORK

COMPONENT	INDICATOR	MEASURABLES	METHODS	FREQUENCY
Physical/ Chemical	Watershed Morphology	Natural landscape processes; areas that have undergone substantial geomorphic change in the previous 200 yrs.; special climatic/geomorphic features.	Historical and current compilation of maps, aerial and land-based photos.	One time inventory.
	Water Condition	Flow, temp, pH, DO, N and P nutrient loading.	EPA-approved equipment and methods at selected areas; seasonal fluctuations.	First year baseline; periodic re-sampling.
	Stream Morphology	Cross-sections, riparian zone.	Rosgen method; photo-point documentation.	
	Atmospheric Inputs	Light intensity, temps, moisture.	Historical climatic and weather data loggers placed at selected locations.	First year baseline; periodic re-sampling.
	Soil Condition	Soil type(s), moisture, compaction, displacement, erosion, puddling, heavy equipment (type/use).	SCS maps; moisture meter; penetrometer; small soil pits; and fixed-transection.	First year baseline; pre- and post stand treatment.
Biological	Habitat Viability	Species occurrence & sightings; Fragmentation and connectivity.	Current condition baseline data compilation; field sampling. Ecotone mapping.	First year baseline; seasonal field sampling.
	Plant Assemblages and Associations	Plant association series; non-native, allelopathic plant communities; plant communities at risk.	Ecotone mapping of current species and patterns. Mapping of plant communities associated with soil conditions. Photo-documentation.	Field validation after first year baseline.
	Habitat Linkages and Fragmentation	Level of heterogeneity at several scales (seral); road, trail, and homestead distribution; livestock effect on vegetation; pattern and location of habitat corridors; contiguous habitats within riparian areas.	Historical and contemporary compilation of information from aerial photos to construct an ecotone map. Ground-level photo-documentation.	Approx. every ten years after first year baseline.
	Historical Range and Variability	Historical composition, range and density of significant plant and animal assemblages; historical population; native/exotic species at unstable pop. levels; dendrochronology study; significant events.	(Same process as above for ecotone mapping.) Survey for root diseases, insect outbreaks, and effects from abiotic stressors.	Approx. every three yrs. after first year baseline.
	Coarse Woody Material and Soil Organics	Down wood quantity, quality and distribution; snag quantity, quality and distribution; litter and duff layers, thickness and composition; products of macro-invertebrates.	Measurement of CWM, litter, duff layers on a fixed-line transect. Soil pits. Photo-documentation.	Initially, then every 5 years pre- and post-treatment.
Human Dimension	Cultural Influences and Land Use	Pattern and extent of human uses (prehistoric to present).	Prehistoric and historic data compilation and map generation for baseline.	One time effort until new information is discovered.
	Human Values	Types of current human uses related to forest commodities; impact of current human uses related to forest amenities.	(Same as above.)	(Same as above.)
	Demographics and Economics	Location and numbers of human inhabitancy (current) land use patterns and property values; employment patterns and income base.	(Same as above.)	(Same as above.)

*This framework is intended as a resource for forest managers, not a checklist of mandatory activities.

Appendix H. Management Plan

Where specifically applicable, and where it is appropriate to the scale, intensity, and context of management, the plan includes description of and rationale for:

Management systems

- Monitoring and adaptive management
 - Forest conditions (effectiveness)
 - Adherence to the management system (compliance)
 - Modifications to original plans (adaptation)
- Equipment and personnel needs

Ecological and silvicultural systems

- Discussion of reference forest types
- Selection and rationale for silvicultural system(s)
- Strategies for regeneration, including rotation length and retention
- Strategies for restoration, including timelines
- Maintenance of structural and species diversity
- Integrated pest control and use of chemicals
- Conservation of soil and water
- Methods and annual rates of harvest, by species and products
- Transportation system
- Fire management
 - Prescribed fires
 - Wildfires
- Fish, wildlife, and their habitats (including non-game species)
- Non-timber forest products
- Methods and annual rates of harvest, by species and products
- Special management areas
 - High conservation value areas
 - Old-growth management
 - Riparian management zone
 - Set asides of sample, representative existing ecosystems
 - Protection sensitive, rare, threatened, and endangered species
 - Other protected areas
- Landscape-level analyses and strategies

Conservation of historical, cultural, and socio-economic resources

- Protection of aesthetic values
- Employee and contractor policies and procedures
 - Community relations
 - Notification of stakeholders
 - A process for public comment
 - Issues concerning American Indians
 - Protection of legal and customary rights
 - Procedures for integrating tribal concerns in forest management

Public access and use
Management of sites of special significance