
**Appendix III: The FSC Regional Certification Standards for British Columbia –
Draft 3**



Forest Stewardship Council (FSC) Regional Certification Standards for British Columbia

Draft 3

April 22, 2002

Recommended by the FSC-BC Regional Initiative Steering Committee

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Preface

1.1 The Forest Stewardship Council

The Forest Stewardship Council is an international non-profit organization founded in 1993 to support environmentally appropriate, socially beneficial, and economically viable management of the world's forests. FSC does this, by accrediting certifiers to assess individual forest operations against the *FSC Principles and Criteria for Forest Stewardship*. Forest operations that meet these standards are permitted to affix the FSC logo to their products in the marketplace, thereby enabling consumers to purchase end products which they know come from forests managed according to FSC standards.

FSC also supports the development of national and local standards that implement the international Principles and Criteria of Forest Stewardship at the local level. These standards are developed by national and regional working groups, which work to achieve consensus amongst the wide range of people and organizations involved in **forest management** and conservation in each part of the world. FSC has developed Guidelines for developing regional certification standards to guide working groups in this process.

The international headquarters of FSC is located in Oaxaca Mexico where the organization is registered as an “Asociación Civil” under Mexican law as the Forest Stewardship Council A.C. (FSC-AC).

The name, acronym and logo of FSC are registered trademarks whose use is strictly controlled by the international Board of FSC-AC. All activities occurring anywhere in the world under the name of the Forest Stewardship Council must be explicitly authorized by FSC-AC.

Readers will find additional information about FSC on the international FSC website at <http://www.fscoax.org>.

1.2 FSC-Canada

The FSC Canada Working Group (called **FSC Canada** for convenience in this document) is an authorized National Initiative of the FSC and is responsible for all FSC activities in Canada. The various Regional FSC Initiatives within Canada are recognized by FSC Canada as subsidiary components of the FSC Canadian National Initiative encompassed within its protocol agreement with FSC-AC. Thus, all Regional Initiatives in Canada are bound by the terms of the protocol agreement between FSC-AC and FSC Canada.

FSC Canada is a not-for-profit organization registered with Industry Canada under the *Canada Corporations Act* in the name “Voluntary Forest Certification Canada”.

Because of the size of Canada and the diversity of forest types across the country, FSC Canada has devolved the responsibility for developing FSC regional certification standards to the various Regional Initiatives. In this respect Regional Initiatives in Canada operate much like National Initiatives. However, before the regional standards prepared by a Canadian Regional Initiative

can be recommended for approval by the international Board of FSC, they must first be endorsed by FSC Canada.

1.3 The FSC British Columbia Regional Initiative

British Columbia (BC) is Canada’s western-most province, largely located between the Pacific Ocean and the Continental Divide of the Rocky Mountains. The northeastern corner of British Columbia is situated east of the Rocky Mountains and is the principal site of the province’s Boreal forests. With a surface area of 947,800 square kilometers (more than twice the size of Sweden) of mostly forested lands, British Columbia is Canada’s largest producer of wood products. (Note: for a more complete description of British Columbia’s forests See **Section 4.1** below)

As an authorized Regional Initiative of FSC Canada, FSC-BC is a semi-autonomous organization responsible for implementing most FSC activities within British Columbia, in particular the development of regional certification standards for the province. Within the broad framework of FSC’s international principles, policies and guidelines, FSC-BC is responsible for electing its own Steering Committee, raising its own operating funds, hiring its own staff and establishing its own process, timetable, communications strategy and staffing arrangements for completing the BC regional standards development and consultation process.

The operations of FSC-BC are directed by an eight-member Steering Committee elected by the members of FSC residing in BC.

1.4 The FSC-BC Steering Committee

These standards were prepared at the request and under the direction of the FSC-BC Steering Committee:

2002 Steering Committee Members:

Economic Chamber:

Bill Bourgeois (Alt.* Troy Hromadniuk)
 Rod Krimmer (Alt. Fred Marshall)

Environmental Chamber

John McInnis (Alt. Lisa Matthauss)
 Tamara Stark (Alt. Cheri Burda)

Indigenous peoples Chamber

Dave Monture (Alt. Shane Wardrobe)
 George Watts (Alt. Justa Monk)

Social Chamber

Hans Elias (Alt. Ananda Lee Tan)
 Nicole Rycroft (Alt. Deb MacKillop)

* To ensure full representation of all Chambers at Steering Committee meetings, each FSC-BC Steering Committee member is entitled to appoint an Alternate who can participate and vote in the member’s place when she/he cannot attend.

1.5 List of key consultants and advisors

The principle advisors to the FSC-BC Steering Committee in the preparation of the Third Draft included:

<i>Technical Advisory Team:</i>	<i>FSC-BC Staff:</i>
Patrick Armstrong	John Cathro, R.P.F., FSC-BC Chair/Executive
Jessica Clogg	Martin Horswill, FSC-BC Standards Development Coordinator
Russell Collier	
Greg Utzig	

Introduction

2.1 The FSC-BC Statement of Purpose

The purpose of the Forest Stewardship Council BC Regional Initiative is to develop and maintain internationally-recognized and approved regional certification standards to encourage **forest management** in British Columbia that is ecologically, economically, and socially sound through a fair and transparent process that protects the integrity of the policies and guidelines of FSC International. FSC BC also assists with the implementation of regional standards in BC by:

- Ensuring that the rights and interests of **indigenous peoples** are recognized in certification initiatives;
- Promoting the involvement of local and regional interests in the development and periodic refinement of regional standards;
- Cooperating with other groups to promote awareness and understanding of FSC certification in British Columbia;
- Monitoring the work of accredited certifiers in British Columbia;
- Promoting the use of certified wood in British Columbia; and
- Encouraging forestry operators in BC to pursue FSC certification.

Status of the Standard

3.1 The Purpose of these Standards

The FSC Regional Certification Standards for British Columbia were explicitly prepared to meet the requirements and needs of FSC certification in the province of British Columbia. The goal of these standards is that forest management activities do not impose unfair costs or burdens on future generations, any one segment of society or a given forest-dependent economic activity.

These standards are the culmination of over 5 years of effort by the FSC British Columbia Regional Initiative.

The First Draft

The work of FSC in British Columbia began in 1996 with the formation of an informal BC Working Group of individuals, organizations and companies interested in FSC certification.

By 1998 this informal group initiated the creation of an Interim Steering Committee for the BC Regional Initiative with a mandate to hold elections for the first Steering Committee as soon as possible and to initiate the preparation of the first draft of regional standards for B.C.

This First Draft, prepared by a group of volunteers, was released by the Interim Steering Committee for public comment in May 1999. In June 1999 the first FSC-BC Steering Committee elections were held and the new 8-member Steering Committee took over management of the BC Regional Initiative immediately.

The Second Draft

On November 20, 1999 the new Steering Committee hosted a public meeting in Vancouver, B.C. attended by over 120 organizations, businesses, government officials and interested individuals to review the Steering Committee's proposed FSC standards development process for completion of the regional standards for the B.C. The meeting wholeheartedly endorsed the recommended process which the Steering Committee immediately implemented.

An eight-member Standards Team with equal participation from nominees proposed by all four FSC-BC Chambers was appointed in January 2000 and spent the next 15 months preparing the Second Draft that it presented to the FSC-BC Steering Committee in late March 2001. The Second Draft was released for public comment in May 2001. Following wide spread notice and dissemination, including a series of five Technical Briefings for each of the four FSC Chambers and for officials of the provincial government, public consultation ended on October 1, 2001.

The results of the public consultation on Draft two together with the results of field testing on three different sites held in August and September, 2001 were combined in a Draft Two Issues Analysis Report prepared for the Steering Committee by a four-member Technical Advisory Team.

Draft Three

The FSC-BC Steering Committee based its preparation of this Third Draft of the FSC Regional Certification Standards for B.C. on the Draft Two Issues Analysis Report. This process involved a series of Steering Committee meetings held over four months that assessed the input from the public comments and the field testing as well as recommended solutions proposed by the Technical Advisory Team. The Steering Committee adopted the Third Draft for recommendation to FSC Canada on April 22nd, 2002.

For detailed information on the FSC-BC Regional Initiative and the process used to develop these standards, please consult the FSC-BC Web site at <http://www.fsc-bc.org>.

3.2 Endorsement by FSC-Canada

Add paragraph here covering FSC Canada endorsement and recommendation to FSC AC.

3.3 Statement by the FSC-BC Steering Committee

Applying the FSC Principles and Criterion in the BC context

FSC Regional Certification Standards for BC are intended for use by forest **managers** and certification bodies throughout British Columbia. The *Guidance Material for Application of the FSC Regional Certification Standards for BC* accompanying these standards has been prepared to assist certifying bodies and forest **managers** seeking certification. As such, this Guidance Material does not represent mandatory requirements.

The following summaries are intended to clarify the application of the FSC Principles and Criteria in the BC context:

Long Term Use Rights

The application of Principle 2 in BC acknowledges that the vast majority of forest is provincially administered Crown land. Notwithstanding the issues described below under Indigenous People's Rights, public ownership means that the forest **manager** is not usually the legal or customary title holder.

Forest management rights to BC's publicly owned forests are assigned to forest **managers** through various **tenure** agreements, not all of which provide for clear long term use rights to the land. Principle 2 enables forest managers with replaceable, volume-based licenses to qualify for FSC certification under Criterion 2.1 by providing assurance through written agreements with government, that other users of lands or resources within the FSC certified **management unit** will continue to implement management strategies and practices consistent with the FSC-certified **management plan** over the long term.

Indigenous People's Rights

The application of Principle 3 in the British Columbia context specifically means that the legitimate interests and **customary rights** of indigenous peoples to use the lands and resources of their traditional territories; to share in the benefits of their use or harvest; to share responsibility for the stewardship thereof; and to practice their culture and traditions will be respected and accommodated.

It is clear that Principle 3 requires that a **manager** respect the legal rights of First Nations. However, the application of Principle 3 in the British Columbia context is complicated by the

lack of signed treaties that would otherwise clearly define the legal rights of First Nations and the extent and limit of **aboriginal rights and title**.

Given this, the FSC-BC Regional Standard has been drafted in a manner that permits Principle 3 to be implemented and respected independent of any evolution or changes in case law, legislation, or policy.

The FSC-BC Regional Standard for Principle 3 establishes a framework that facilitates as an outcome of certification new and/or enhanced relationships between forest **managers** and First Nations. For the purposes of certification, First Nations “control” under Principle 3 is exercised first and foremost through a protocol agreement that governs the relationship between the parties.

By definition, each protocol agreement must be one that is acceptable to both the First Nation and the forest **manager**. In this way, each First Nation may be assured of defining both control and participation in decision making in a manner acceptable to that First Nation.

Maintenance and/or Restoration of Ecosystem Integrity

In the BC context, the Principle 6 phrase “maintain the ecological functions and the integrity of the forest”, and other uses of the phrase “maintain or restore” has been interpreted to mean the maintenance of existing natural forest characteristics and, when they are not sufficient to meet **ecosystem integrity** at both the **landscape** and stand levels, restoration of areas diminished prior to certification. The general approach in the BC Regional Standards has been to define a series of indicators under Principles 6, 9 and 10, that facilitate verification of actions taken by forest **managers** to address the various components of **ecosystem integrity** (e.g., landscape pattern, stand structure, **critical habitats** for naturally occurring species, riparian disturbance, soil productivity, etc.).

The framework requires that the **manager** has collected appropriate inventory information (including a description of the **range of natural variability** and the context of the **management unit**), assessed risks to the various **ecosystem** components present, and based on inventory and risk assessment results, defined and implemented a management regime appropriate to maintaining **ecosystem integrity** of the **management unit**.

High Conservation Value Forests (HCVFs)

The intent of Principle 9 in BC is to ensure that forest management activities in **HCVFs** maintain or enhance the attributes that define such forests.

In applying Principle 9 in the BC context, forest **managers** are directed to pay particular attention to the definition of **HCVFs** and the required assessment process that provide comprehensive provisions for the identification and maintenance of **HCVF** conservation attributes.

BC contains globally significant **HCVFs** as well as **HCVFs** at the national and regional levels. As indicated in the definition of **HCVFs**, they can be identified on the basis of ecological values (e.g., habitat for endangered species, rare **ecosystems**, provision of **ecosystem** services (e.g., preventing erosion), provision of basic needs (e.g., consumptive use watersheds), or human-based cultural values (e.g., sacred sites, visually sensitive areas). Not all management units in BC are necessarily expected to contain **HCVF** attributes.

Major Failures

In describing the required content for FSC regional standards, The FSC *National Initiatives Manual* stipulates, “clear indication will be given as to what constitutes a failure to achieve acceptable performance for each principle. Failure to achieve adequate performance for a principle is to be considered a major failure and prohibits the awarding of a certificate by an FSC endorsed certification body”.

It is the expectation of the FSC-BC Steering Committee that “major failures” will be assessed under the FSC Regional Certification Standards for BC in the following manner:

- A. Failure to comply with a Principle constitutes a major failure and will preclude certification.
- B. Failure to comply adequately with the aggregate of Criteria and Indicators of a Principle constitutes a major failure of that Principle.
- C. In some instances a particular Criterion or Indicator has been identified in the FSC Regional Certification Standards for BC as of such importance that a failure to meet it constitutes a major failure at the Principle level.
- D. A Criterion or indicator that must be met to avoid a major failure has been specifically identified, and marked by the phrase:

"Failure to meet Criterion x.y will result in a major failure of Principle x." or

"Failure to meet Indicator x.y.z will result in a major failure of Principle x."

- E. Where a Criterion is marked as a major failure, certification bodies consider all Indicators under this Criterion in the aggregate to determine if the Criterion has been met.

The following list of major failures has been identified in Draft Three of the FSC Regional Certification Standards for British Columbia

Principle One	
1.6	Manager demonstrates long-term commitment to FSC P & Cs
Principle Two	
2.1.1	Manager has legal right to manage the lands and resources
2.3.3	Manager is not involved in outstanding disputes
Principle Three	
3.1.1	Manager recognizes and respects the rights of the First Nation(s)
3.1.3	Manager has negotiated a protocol agreement with the First Nation(s)
Principle Four	
4.1.4	Manager treats employees in a fair and equitable manner
4.3.1	Manager supports employees’ right to organize and negotiate
4.4.3	Manager protects the rights of directly affected persons

Principle Five	
5.6.1	Rate of harvest is based on a documented and comprehensive analysis
5.6.4	Decadal harvest level does not exceed the projected long-term harvest rate
Principle Six	
6.1.3	Manager completes operational level inventories
6.1.7	Manager describes estimated range of natural variability (RONV)
6.1.9	Environmental inventory assessments guide management planning
6.2.2	Manager protects habitat of red and blue listed species
6.3.1	Manager implements activities to restore restoration areas
6.3.12	Seral stage, patch size and interior habitat is compatible with RONV
6.4.1	Manager establishes and manages a network of protected reserves
6.5.11	Manager maintains or restores riparian functions
6.6.1	Chemical pesticide are phased out over a period of two years
6.10.1	Areas of new conversion to plantations do not exceed 10% of the THLB
6.10 b)	Conversions to plantation do not occur in High Conservation Value Forest areas
6.10.3	Measures identified in the manager's evaluations to secure conservation benefits from conversions are implemented
Principle Seven	
7.1.9	Operational plans based on the management plan are prepared to guide management activities
7.4.1	The management plan and supporting operational plans are made public
Principle Eight	
8.1.9	Results of monitoring are regularly analyzed and acted upon
Principle Nine	
9.3.3	Management measures maintain HCVF attributes
9.3.4	If contested, the manager provides evidence conservation measures will maintain conservation attributes
Principle Ten	
10.2.1	Plantation areas are consistent with landscape level biodiversity objectives
10.5.1	Plantation area does not exceed 10% of the timber harvesting landbase

The British Columbia Context

4.1 The geographic area covered by these Standards

The FSC Regional Certification Standards for BC are intended for application throughout the province of British Columbia.

British Columbia encompasses 95 million hectares or 234 million acres (the combined size of France, Germany and the Netherlands) with relatively little development. Forests, which cover

about two-thirds of the province, are central to B.C.'s way of life—not only in terms of the economy and jobs, but also for recreation, drinking water, wildlife, and spiritual values.

British Columbia is a diverse province, more variable physically and biologically than any comparable region in Canada. Broadly speaking BC is a cool, moist, mountainous, forested region with areas of semi-arid, subarctic, and alpine climates. The province has been ecologically classified into 14 **biogeoclimatic zones**, based on mean annual precipitation, temperature, soils and vegetation. Forests dominate the vegetation but there are also areas of grasslands, wetlands, scrub and tundra.

Because of the wide variation described above, these standards are designed for use in any type of forest or **ecosystem** found in the province. For this reason they require site-specific interpretation by the forest **manager** and by the certification body suited to the specific ecological context of each **management unit**.

4.2 List of publications referred to in these Standards

BC Ministry of Forests. Forest Practices Code Guidebooks: available on the web at:
<http://www.for.gov.bc.ca/tasb/legregs/fpc/FPCGUIDE/Guidetoc.htm>

- Mapping and Assessing Terrain Stability 1999
- Hazard Assessment Keys for Evaluating Site Sensitivity to Soil Degrading Processes 1999
- Soil Conservation 2001
- Soil Conservation Surveys 2001
- Soil Rehabilitation 1997.
- Channel Assessment Procedure Field Guidebook 1996
- Biodiversity 1995

BC Ministry of Forests and BC Ministry of Environment, Lands and Parks. 1998. Riparian assessment and prescription procedures. Watershed Restoration Program Tech. Circular No. 6. MoF and MELP. Victoria, BC

BC Ministry of Forests and BC Ministry of Environment, Lands and Parks. 1995. The Riparian Management Area Guidebook. MoF and MELP. Victoria, BC.

BC Ministry of Forests and BC Ministry of Environment, Lands and Parks. 1996. Channel Assessment Procedure Guidebook and Field Guidebook. MoF and MELP. Victoria, BC

BC Ministry of Forests and BC Ministry of Environment, Lands and Parks. 1999. Coastal Watershed Assessment Procedure Guidebook (CWAP) : Interior watershed assessment procedure guidebook (IWAP) – second edition. MoF and MELP. Victoria, BC.

BC Ministry of Forests and BC Ministry of Environment, Lands and Parks. 1996. Lake Classification and Lakeshore Management Guidebook: Nelson Forest Region. MoF and MELP. Victoria, BC.

- Bibby, C.J. 1992. Putting biodiversity on the map: Priority areas for global conservation. Washington, D.C.: Integrated conservation and Development Project (ICDP).
- Carver, M. and D. Putt 1999. Channel assessment and sediment source review with rehabilitation prescriptions - Ross, North Aylmer, and South Aylmer Creeks, Queen's Bay Area. Unpubl. report for Meadow Creek Cedar Ltd. Nelson, BC. 23pp. Appds.
- Carver, M. 2001. Riparian Forest Management for Protection of Aquatic Values: Literature Review and Synthesis. Unpubl. report for FSC-BC. Nelson, BC. 48 pp.
- Clayoquot Sound Scientific Panel. 1995. Sustainable Ecosystem Management in Clayoquot Sound: Planning and Practices. Report 5, Province of BC. Victoria, BC. 296pp. Appds.
- Curran, M., I. Davis, and B. Mitchell. 2000. Silviculture Prescription Data Collection Field Handbook - Interpretive Guide for Data Collection, Site Stratification, and Sensitivity Evaluation for Silviculture Prescriptions. Land Management Handbook 47. Province of B.C. Victoria, B.C.
- Draft Principle 9 Advisory Panel Recommendation Report Version 1.2, March 2001, Forest Stewardship Council
- Howes, D.E. and Kenk, E. 1997. Terrain Classification System for British Columbia. MOE Manual 10 (version2). Fisheries Branch, Ministry of Environment; Surveys and Resources Mapping Branch, Ministry of Crown Lands, Province of British Columbia. 102 p.
- Resources Inventory Committee, 1995. Guidelines and Standards for Terrain Mapping in British Columbia. Province of B.C. Victoria.
- Ricketts, Taylor, Dinerstein, Olson, Loucks et al. 1999. Terrestrial Ecoregions of North America, a conservation assessment, World Wildlife Fund/United States and Canada, Island Press.
- Utzig, G.F., P.Ag., Holt, R.F., R.P.Bio. August 15, 2000 Forest Stewardship Council BC Regional Initiative Principle 9 Technical Consultation Background Paper

General References for Glossary:

- Dunster, J. and K Dunster. 1996. Dictionary of Natural Resource Management. UBC Press. Vancouver, B.C.
- Ministry of Forests Glossary – website link
<http://www.for.gov.bc.ca/PAB/PUBLCTNS/GLOSSARY/GLOSSARY.HTM>

FSC Publications

FSC-AC, February 2000 FSC Principles and Criteria

Radosevich, S., M.Lappé and B.Addlestone. 2000. Use of Chemical Pesticides in Certified Forests: Clarification of FSC Criteria 6.6, 6.7 and 10.7. FSC-USA

Glossary

The following list provides definitions for technical terms used in the FSC-BC Regional Standards. Terms that have been defined by FSC International are referenced as (FSC-AC, February 2000). All other terms have been defined by the BC Regional Standards for use in the British Columbia context. Where a term defined by FSC International has been further defined for use in the FSC-BC Regional Standards, the further definition follows the FSC International definition and begins with the phrase, “In the BC context...”

To assist the reader, each occurrence of a defined term is **bolded** throughout these standards.

Aboriginal Rights: A practice, custom or tradition integral to the distinctive culture of the aboriginal group claiming the right. Often **aboriginal rights**, including site specific rights, can be made out even if title cannot: based on R. v. Van der Peet, [1996] 2 S.C.R. 507; R. v. Adams, [1996] 3 S.C.R. 101.

Aboriginal Title: The unique title to the First Nation’s lands, territories and resources which arises from occupancy before the assertion of British sovereignty, or which arises from and reflects the pattern of land holdings under aboriginal law. **Aboriginal title** confers more than the right to engage in site-specific activities. What **aboriginal title** confers is the right to the land itself. If a Nation has **aboriginal title**, the land may be used for a variety of activities that need not be elements of a practice, custom or tradition integral to the distinctive culture of the aboriginal group claiming the right: based on Delgamuukw v. British Columbia, [1997] 3 S.C.R. 1010.

For a definition of **aboriginal rights** with regard to consultation, please see the definition, this glossary, **for consult, consultation**.

Agencies responsible for enforcement or auditing of laws affecting forest management: Includes the Ministry of Forests; Ministry of Water, Land and Air Protection; Ministry of Sustainable Resource Management, the Forest Practices Board; the Land Reserve Commission; the Department of Fisheries and Oceans; the Workers Compensation Board; and First Nations agencies specific to individual First Nations.

Antique forests: Old growth forests of exceptional age and/or environmental continuity; forest stands where the time since the most recent stand-replacing event exceeds the age of the oldest trees in the stand (often by 2 or more generations).

Applicable law: Includes applicable legislation as well as common law principles (e.g., legal principles related to contracts and **Aboriginal Title and Rights**).

Applicable legislation and guidebooks: The legislation and guidebooks that apply to the operations associated with the **management unit**. (See Guidance Material on Applicable Legislation and Guidebooks).

Appropriate to the scale and intensity: The phrase "**appropriate to the scale and intensity**" is used in Indicators and Verifiers to indicate to a certifying body that judgment is required in deciding the level of effort that can reasonably be expected from a **manager** in addressing a particular element of the FSC-BC Regional Standard. The intent is to relate expectations to the **manager's** resources, size of the management unit, and potential management impacts related to the specific element. Consideration should also be given to the significance of potential impacts of the management activities addressed, the sensitivity of values potentially affected, the reversibility of the potential effects and the relative importance of the values.

Aquatic habitats: Those parts of the environment on which an organism depends, directly or indirectly, in order to carry out its life, that are on, in or partially submerged in water.

Binding international agreements: For the purposes of Criterion 1.3, in the BC context, **binding international agreements** relevant to forest operations include:

- ❑ Convention on **Biological diversity**
- ❑ Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention)
- ❑ Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- ❑ Convention for the Protection of the World Cultural and Natural Heritage
- ❑ Convention on the Protection of Migratory Birds in Canada and the United States
- ❑ 1909 Boundary Waters Treaty
- ❑ Framework Convention on Climate Change
- ❑ North American Agreement on Environmental Cooperation
- ❑ International Labour Organisation (ILO) C.100: Equal Remuneration Convention
- ❑ ILO C.111: Discrimination (Employment and Occupation) Convention

Biogeoclimatic Ecosystem Classification (BEC): A hierarchical system that organizes **ecosystems** at three levels of integration: site, regional and chronological. At the regional scale the system integrates climate, vegetation and zonal site classifications. The zonal or regional climate (reflected by vegetation and soil relationships) defines the basic biogeoclimatic unit, the subzone. Subzones are grouped into biogeoclimatic zones (based on similar climax tree species), and may be further subdivided into **variant's** based on further refinements of climate (e.g., wetter, warmer, snowier), and the presence or absence of particular tree species. At the site level the most commonly used unit is the **site series**, defined as all land areas within a BEC subzone or **variant** with similar or equivalent physical properties that will produce similar plant communities at climax. Successional communities are grouped into a series of structural or seral stages for each **site series** to define the chronological level of integration (for further information see <http://www.for.gov.bc.ca/research/becweb/becinfo>).

Biological control agents: Living organisms used to eliminate or regulate the population of other living organisms (FSC-AC, February 2000).

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) (FSC-AC, February 2000).

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) (FSC-AC, February 2000).

Chain of custody: The channel through which products are distributed from their origin in the forest to their end-use (FSC-AC, February 2000).

Channel assessment: Descriptions of stream reach characteristics, conditions, disturbance factors and ratings of channel stability; *reconnaissance assessments* usually include reach classification, airphoto interpretation of channel conditions before and after watershed disturbances (for channels > 30 m wide), and field-based descriptions of channel morphology and changes in morphology resulting from disturbance; *detailed assessments* include more detailed sampling and description of channel characteristics, including smaller channels (for further information consult FPC Channel Assessment Procedure Field Guidebook and the Annex on Riparian Assessments for references on procedures applicable to small streams - 1996).

Chemicals: The range of fertilizers, insecticides, fungicides, and hormones, which are used in **forest management** (FSC-AC, February 2000).

Chemical pesticides: chemical substances used to deliberately kill unwanted plants or other organisms; includes herbicides, insecticides, algicides and fungicides.

Coarse Woody Debris (CWD): Sound and rotting logs and large branches that have fallen or been cut and left in the forest, and that provide habitat for plants, animals, and insects and a source of nutrients for soil development (generally > 7.5 cm in diameter).

Compaction: An increase in the bulk density (mass per unit volume) and a decrease in soil porosity resulting from applied loads, vibration or pressure. It is undesirable for plant growth since the compacted soil has insufficient pore space to allow effective diffusion of gases and liquids necessary to permit or maintain root development and nutrient uptake in plants.

Compatible with natural disturbance regimes, patterns or the range of natural variability: Sufficiently similar in function, frequency, intensity, spatial extent and degree of heterogeneity to natural disturbances (e.g., those caused by fire or wind), to result in similar **ecosystem** characteristics and landscape patterns to those that result from natural disturbances; management strategies include a range of practices that represent a significant portion of the **range of natural variability** centered on the estimated mean or median condition (i.e. do not focus on strategies on either end of the range; landscape and/or regional seral stage distributions or amounts of old and mature forests are maintained within 2 standard errors of mean natural levels or +/- 25% of estimated mean when data are lacking); avoid doing the same thing everywhere all the time (e.g., high stand level retention in some areas, moderate and low in others, wildlife tree patches in some areas, single tree retention in others); management strategies do not include practices that attempt to mimic extreme events of low frequency (e.g., massive fires or hurricanes), as disturbance events of that magnitude will continue naturally and their frequency is likely beyond most planning horizons; where practices are outside the range of natural variability, there are mitigating factors that ensure the maintenance of **ecological integrity** in the broader context (See also Guidance Material on RONV).

Conflict: A situation where compliance with the law would preclude compliance with the FSC-BC Regional Standards or vice versa. The mere fact that the FSC-BC Regional Standards are more stringent than existing law does not by itself imply that there is a **conflict** for the purpose of Criterion 1.4.

Connectivity: The degree to which different habitat patches or environments are linked by single or multiple corridors of vegetation that provide habitat suitable for dispersal or seasonal movement of particular species, or the migration of **ecosystems** in response to long-term environmental change; conditions necessary for **connectivity** and its effectiveness will depend on the specific purpose of the **connectivity** and the requirements of species or **ecosystems** considered.

Conservation attributes: For the purpose of the FSC-BC Regional Standard a conservation attribute is an element, structure or process associated with a High Conservation Value, that can be monitored and managed to ensure its persistence over time. For example, if the HCV designation within a **management unit** is a consumptive watershed, the associated **conservation attributes** might include water quality and quantity, flow regimes, integrity of water courses and condition of seeps and springs. These **conservation attributes** would be identified during the **HCVF** assessment and management strategies to maintain and/or enhance them would be developed, implemented and monitored as appropriate.

Consulting with the First Nation: Two recent court cases, known as *Taku*¹ and *Haida*², have further refined rules regarding consultation processes that involve **Aboriginal Rights and Title**³. Of relevance to forest **managers** and certifying bodies, are the following extractions from *Taku* and *Haida*:

1. Aboriginal peoples must be properly consulted. That is, the Provincial Crown always has a duty to consult. Consultation must be in good faith, and with the intention of substantially addressing the concerns of the Aboriginal peoples whose lands are at issue.
2. Third parties now also have a duty to consult with First Nations. That is, forest **managers** have a legally enforceable duty to consult with First Nations in good faith and to endeavour to seek workable accommodations. And finally,
3. There is no longer a requirement that First Nations must prove their rights or title in Court before they can be consulted on. That is, the duty to consult arises before an Aboriginal Nation proves their rights or title in Court.

For purposes of FSC-BC, characteristics of a good consultation process include:

- ❑ The consultation process is designed with First Nations' and is agreed to by both forest **manager** and First Nation.
- ❑ The **management plan** is developed with the First Nation(s) communities.
- ❑ The First Nation(s) are satisfied the schedule of consultation is sufficient to provide them with effective involvement in the development and monitoring of the plan.
- ❑ The First Nation(s) are satisfied their concerns have been appropriately recorded (e.g., in writing, maps, videos) and have been incorporated in the **management plan** as required.
- ❑ First Nation(s) identify the **resources and tenure rights** and the **sites of special cultural, ecological, economic, or religious significance** they require to be protected and indicate their locations on maps where appropriate.

¹ Taku River Tlingit First Nation v. Ringstad et al, 2002 BCCA 59

² Haida Nation v. B.C. and Weyerhaeuser, 2002 BCCA 147

³ This case law continues to evolve

- ❑ The extent to which proposed management activities may threaten or diminish the **resources and tenure rights**, or impact sites of special significance of the First Nation(s) is assessed to the satisfaction of the First Nation(s).
- ❑ Strategies are developed and implemented to maintain the **resources and tenure rights** and to protect sites of special significance of the First Nation(s).
- ❑ The First Nation(s) are satisfied the strategies are sufficient to avoid threatening or diminishing their **resources and tenure rights** and to protect their sites of special significance.
- ❑ In the case of an unanticipated threat or diminishment to resources or **tenure rights** or sites of special significance due to management activities, the First Nation(s) are satisfied appropriate measures are taken to maintain those resources or **tenure rights** (e.g., stop work, notification, assessment, mapping).
- ❑ Financial, technical or logistical capacity-building support, in proportion to the scale and intensity of operations, is available to the First Nation(s) where required to assist with consultation.

(See also “**Joint management agreement**”, FSC-BC Glossary.)

Criterion (pl. Criteria): A means of judging whether or not a Principle (of forest stewardship) has been fulfilled (FSC-AC, February 2000).

Critical habitat: An **ecosystem** or particular **ecosystem** element occupied or used by a species, or local population, that is necessary for their maintenance and/or long-term persistence, and where appropriate, recovery of a species or population. Habitat protection and management focuses efforts on maintaining or restoring suitability of the highest capability areas, while also ensuring an adequate supply of suitable habitat from other areas, when high capability areas are not in a suitable state.

Customary rights: Rights which 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 (FSC-AC, February 2000).

Cutblock area: the gross area of an individual harvesting unit with defined boundaries, including: the net area to be reforested (NAR), areas of aggregated and dispersed retention and permanent access structures within the harvesting unit (excluding rock, wetland or other areas that in their natural state are non-forested **ecosystems**).

Database: An organized collection of related information.

Delegate control: In most cases, First Nations are not the primary initiators or actors in forestry. Therefore, there will usually be an element of delegating control of forestry to a forest **manager** in FSC-certified operations. Implicit in the concept of **free and informed consent** in this context is the right to set conditions for delegation of control. Conditional delegated control means specific conditions for granting, withholding, or withdrawing consent for delegation of control are set. The conditions could also set benchmarks to be met by the forest **manager**. Those with authority to **delegate control** retain the right to revoke the delegation. **Indigenous peoples’ right to delegate control** in the manner of their choosing is one of the “**legal and customary rights**” referred to in Principle 3. (See also “**free and informed consent**”, and “**legal and customary rights**”, FSC-BC Glossary)

Detailed terrain assessments: site specific assessments generally focused on terrain hazards related to individual road segments or cutblocks involving intensive ground checking; includes a FPC Terrain Stability Field Assessment (TSFA) and other related assessments where required (e.g., waterborne erosion hazards along ditchlines, highly detailed mapping of terrain features, stability or erosion hazards related to gentle over steep situations, the **likelihood of landslides** reaching areas of human habitation); (See also **Hydrologic assessments** – the two may be combined when appropriate, and see FPC Mapping and Assessing Terrain Stability Guidebook 1999.)

Detrimental Soil Disturbance: Soil degradation; any change in physical, chemical or biological properties of the soil, including the organic forest floor or the mineral soil extending from the surface to the depth at which the unweathered parent material is encountered, that reduces soil fertility or forest productivity and/or results in adverse impacts on other **ecosystem** components (e.g., **compaction**, puddling, surface soil displacement, pH changes). This does NOT include *non-detrimental* soil disturbance (i.e. soil disturbance that does not result in productivity losses or other negative environmental impacts – e.g. drag scarification or micro mounding), and it does NOT include fully rehabilitated disturbance (e.g., rehabilitated temporary roads or fire guards). Methodology for determining sensitivity to such changes and their recognition can be found in the FPC Guidebooks for Hazard Assessment Keys for Evaluating Site Sensitivity to Soil Degrading Processes 1999, Soil Conservation 2001, Soil Conservation Surveys 2001 and Soil Rehabilitation 1997.

Directly affected persons: People or groups who:

- ❑ consider themselves directly affected by the proposed and current operations;
- ❑ reside in communities within or adjacent to the management unit; or,
- ❑ have legal or **customary rights** in the management unit.

Dispute: A **dispute** exists when the parties have exhausted consultative avenues to resolve their differences and the following occurs:

- ❑ a person or persons whose rights or interests are directly affected by the forest **manager's** activities gives written notice to the **manager**, indicating that they wish to pursue a **dispute** resolution process and specifying:
 - which rights or interests are affected,
 - by which management activities,
 - in which location, and
 - what modifications are considered appropriate to avoid or mitigate impacts on the rights or interests;
 OR,
- ❑ the **manager** gives written notice to the disputant, in order to trigger the **dispute** resolution process and bring closure to the disagreement.

Dynamic Reserves: Mapped and designated areas of the reserve network, within NDT 3 or 4, where, if suitable replacement areas are available, management objectives include the application of treatments that mimic stand-replacing natural disturbance events and/or stand maintaining fires. In areas of frequent stand-replacement disturbances, these are areas managed on extended rotations with special measures taken to ensure harvesting, regeneration and stand development mimic natural processes as closely as possible. Where forest harvesting is utilized to mimic a stand-replacing disturbance, the frequency of the harvesting (i.e. rotation) is at least 1.2 times the estimated mean return interval of the disturbance, and stand level retention is similar in quality and distribution to the disturbance (i.e. post-harvesting ~ post-natural disturbance), but significantly higher in quantity than the estimated mean for the natural disturbance (i.e. upper end of RONV). Restocking is limited to natural regeneration, and where required to meet ecological objectives, fill-planting. Silvicultural systems utilized to mimic frequent low intensity fires and/or reduce fuel loading in areas with fire-maintained **ecosystems**, retain stand level habitat elements similar to those retained with natural fire regimes, and include the use of controlled burning wherever possible. Within dynamic reserve areas, only stands with an age of at least 80% of the estimated natural return interval for stand replacing events contribute to meeting the minimum protected reserve area requirements. Dynamic reserve areas less than that age are designated dynamic reserve replacement areas. (See also **Protected reserves**).

Ecological integrity: See **ecosystem integrity**.

Ecoregion: See **Ecoregional classification system**

Ecoregional Classification System: A system used to stratify BC's terrestrial and marine **ecosystem** complexity into discrete geographical units at five levels. The two highest levels, Ecodomains and Ecodivisions, are very broad and place British Columbia globally. The three lowest levels, Ecoprovinces, **Ecoregions** and **Ecosections** are progressively more detailed and narrow in scope and relate segments of the province to one another. They describe areas of similar climate, physiography, oceanography, hydrology, vegetation and wildlife potential. An **ecoregion** is an area with major physiographic and minor macroclimatic or oceanographic variation. There are 43 **ecoregions** in BC, of which 39 are terrestrial. An **ecosection** is an area with minor physiographic and macroclimatic or oceanographic variation and similar climate, physiography, oceanography, hydrology, vegetation and wildlife potential. There are 114 **ecosections** in BC varying from pure marine units to pure terrestrial units. **Ecosections** are meant to be mapped at small scales (1:250,000) for resource emphasis and area planning (See also <http://srmwww.gov.bc.ca/rib/wis/eco/>).

Ecosection: See **Ecoregional classification system**

Ecosystem: A community of all plants and animals and their physical environment, functioning together as an interdependent unit (FSC-AC, February 2000).

Ecosystem function, ecosystem functioning: Biotic or abiotic process that provides for the integration or interaction of various **ecosystem** components, the flow of nutrients or energy amongst those components, or otherwise causes changes through space and time.

Ecosystem integrity: The diversity of organisms at all levels, including genetic variation, species, populations, **ecosystems**, landscapes and their physical environments; the ecological patterns, structural attributes, functions and processes that are responsible for that **biological diversity** and also responsible for **ecosystem** resilience, allowing for recovery following disturbance.

Ecosystem services: The conditions and processes through which natural **ecosystems** provide life-support functions, such as cleansing, recycling, renewal and moderation (e.g., water purification and supply, climate regulation, carbon storage, slope stability, flood control, avalanche control).

Endangered species: Any species which is in danger of extinction throughout all or a significant portion of its range (FSC-AC, February 2000).

In the BC context this term has a more specific meaning (See BC Conservation Data Centre (CDC) at <http://www.env.gov.bc.ca/rib/wis/cdc/> or COSEWIC at <http://www.cosewic.gc.ca/>).

Enduring feature: Biophysical land classification unit based on broad scale landforms, soils and vegetation zonation.

Environmental risk assessment: An estimate of the likelihood or probability of an adverse impact on the environment resulting from human activities (e.g., See Guidance Material on Environmental Risk Assessment).

Equivalent clearcut area (ECA): An index of potential watershed level hydrologic impacts (e.g., increased peak runoff) due to forest cover removal, normally expressed as a percentage of the naturally forested area of a watershed; areas where forest cover has been completely removed by harvesting, fire or other disturbances are assessed as full percentages (e.g. clearcuts, intensive burns), areas with partial stand removal are pro-rated according to the percentage of the crown cover removed (i.e. equivalent to clearcut); areas partially recovered through forest regeneration are pro-rated according to the degree of crown closure and height of the regeneration; unweighted ECA is the resulting percentage of area in a non-hydrologically greened-up state; weighted ECA is calculated by adding the percentage ECA below the **H60 line** to 1.5 times the percentage for the area above the **H60 line** (the area with greatest potential to increase peak flows); the **H60 line** is the elevation at which a watershed's area is split into 60% of the area above and 40% below.

Exotic species: An introduced species not native or endemic to the area in question (FSC-AC, February 2000).

Forest integrity: The composition, dynamics, functions and structural attributes of a **natural forest** (FSC-AC, February 2000) In the BC context, see also the definition of **Ecosystem integrity**.

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 (FSC-AC, February 2000). In the BC context, see “**manager**.”

Former plantations – See Other forest types

Free and informed consent: *Consent* has with two aspects to it: the consent must be *freely given*, and it must be *knowledgeably given*. Consent itself means to express willingness; to give permission; to agree. It also means a voluntary agreement; a permission. *Freely given consent* is consent that is voluntarily given, without manipulation, undue influence or coercion. Key to “freely given consent” is maintaining the essential dignity and individual/community’s right to choose. *Informed consent* involves explicitly informing a participant in the process, its potential benefits and risks, the alternatives to participating, and the right to withdraw from the process at any time. Key to “informed consent” is the quality, timeliness and appropriateness of information used to decide consent. Implicit in the right of **free and informed consent** in this context is the right to set specific conditions for granting, withholding, or withdrawing consent. The conditions could also set benchmarks to be met by the forest **manager**. **Indigenous peoples’** right to grant, withhold or withdraw consent is one of the “**legal and customary rights**” referred to in Principle 3. (See also “**delegate control**”, and “**legal and customary rights**”, FSC-BC Glossary)

Free and informed consent from local rights holders: For the purposes of Criterion 2.2, **free and informed consent** is considered given by **local rights holder(s)** where: a) **local rights holders** have participated in a public participation process under Criterion 4.4 that accommodates their needs/preferences with regard to scope and design (as demonstrated by lack of **disputes** regarding the process from **local rights holders**); and, b) having been informed of the opportunity to do so, no **local rights holder** has given written notice to the **manager** that they **dispute** that proposed management will protect their rights or resources.

Genetically modified organisms: Biological organisms which have been induced by various means to consist of genetic structural changes (FSC-AC, February 2000).

In the BC context this is interpreted to be: organisms that result from the introduction, removal or suppression of genetic material through artificial means (e.g., bacterial vector, mechanical).

Grievance notice: Notification provided to the **manager**, in writing, by a **local** person or people regarding actual or potential loss or damage affecting their property, resources, livelihoods, or legal or **customary rights**, resulting from the **manager’s** activities.

Grievance involving potential loss or damage: A grievance where there is evidence that proposed or ongoing forestry activities are likely to cause loss or damage to the rights, property, resources or livelihoods of a **local** person or people.

Grievor: A person who provides a **grievance notice** to the **manager**.

H₆₀ line: See equivalent clearcut area.

HCVF: See **High Conservation Value Forests**

High Conservation Value Forests (HCVF): High Conservation Value Forests in the BC context are those that possess one or more of the following attributes:

1) 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.

- 1.1 Forest areas that include the **critical habitats** of globally, nationally or provincially **threatened species**. **Critical habitats** are the habitat necessary for the survival and recovery of the species including:
 - a) the habitats (locations) of stationary species, and/or
 - b) the feeding, resting or reproduction sites of mobile species, and/or
 - c) travel routes of mobile species.
 - 1.1.1 Globally **threatened species** are species designated as critically endangered (G1), endangered (G2) or vulnerable (G3) by NatureServe (available on WWW).
 - 1.1.2 Nationally **threatened species** are species designated as endangered, threatened or of special concern (vulnerable) by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) (available on WWW).
 - 1.1.3 Provincially **threatened species** are species designated as endangered or threatened (Red List) or vulnerable (Blue List) by the BC Conservation Data Centre (available on WWW) or based on best available information. The CDC maintains a web-based tracking system that includes lists of rare species by Forest District.
- 1.2 Forest areas that include the **critical habitats** of endemic species. An endemic species is a species with: (a) a global range of 5,000,000 ha or less; or (b) a global range of more than 5,000,000 ha, with 75% or more of the global range contained within a single biogeoclimatic zone, **ecoregion** or drainage basin (Birdlife International (Bibby 1992) uses (a) World Wildlife Fund-US and World Wildlife Fund Canada, (*Terrestrial Ecoregions of North America: A Conservation Assessment*, Ricketts, et al, Island press, 1999) use (a) and (b) but apply (b) only to **ecoregions**). Sources for information include the Conservation Data Centre and British Columbia Ministries of Sustainable resource management and Water, Land Air Protection.
- 1.3 Forest areas that support any of the following: rare ecological or evolutionary phenomena; intact predator assemblages; migrations of large vertebrates; major routes of smaller migratory species; concentrations of large vertebrates; large concentrations of smaller vertebrates (e.g., birds).
- 1.4 Forest areas of 100,000 ha or more, where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance.

- 1.5 Forest areas associated with high-value fish habitat. Fish surveys are the primary source of data; (See British Columbia Ministry of Sustainable Resource management FishInfo BC [available on WWW]).

2) Forest areas that are in or contain rare, threatened or endangered ecosystems.

- 2.1 **Ecoregions** designated as critical, endangered or vulnerable at the globally outstanding level by the Conservation Assessment of the Terrestrial Ecoregions of North America (World Wildlife Fund Canada & World Wildlife Fund United States (*Terrestrial Ecoregions of North America: A Conservation Assessment*, Ricketts, et al, Island press, 1999); NOTE: WWF **Ecoregion** analysis uses an **ecosystem** classification protocol different than that used in BC as defined by Resource Inventory Committee Standards).
- 2.2 Forest areas designated as threatened frontier forests by World Resources Institute and further refined by Global Forest Watch (available on WWW).
- 2.3 Plant communities designated as endangered or threatened (Red List) or vulnerable (Blue List) by the BC Conservation Data Centre (available on WWW).
- 2.4 Forest areas that are under-represented (<10% **BEC variant**, or **site series** or groups of **site series** where applicable) in protected areas. The British Columbia Ministry of Sustainable Resource Management maintains a Web-based tool for researching **ecosystem** representation.
- 2.5 Intact or undeveloped watersheds over 5,000 hectares in size where **ecosystems** are underrepresented in protected areas (e.g., <10% **BEC variant** by **ecosection**).
- 2.6 Forest areas containing mature and old forest where the amount of old forest remaining by **BEC variant** has been reduced to less than 50 percent of the estimated natural occurrence of old forest.

3) Forest areas that provide basic services of nature in critical situations (e.g. watershed protection, erosion control).

- 3.1 Where downslope or downstream consequences of landslides, sediment production or snow avalanches are significant (e.g., spawning habitat, transportation or communication infrastructure), forest areas associated with unstable terrain (Class IV, V), highly erodible soils or snow avalanche starting zones.
- 3.2 Forests required for maintenance of flow regimes and/or flood prevention in critical watersheds (e.g., riparian stands, forest stands above the **H60 line** in snowmelt-dominated watersheds). Watershed assessments are the primary data source.

4) 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)

- 4.1 Forest areas that are the direct source of 10% or more of the **local** community's food supply identified through consultation. Sources of information include First Nations communities, **local** communities, **local** organizations and enterprises, British Columbia Ministry of Water, Land and Air Protection, British Columbia Ministry of Forests, British Columbia Ministry of Sustainable Resource Management, and **local** and regional government.

- 4.2 Forest areas that are the direct source of 10% or more of materials used directly for community or ceremonial purposes by the **local** community, as identified through consultation (e.g., wood, skins, other non-food materials). Sources of information include First Nations communities, **local** communities, **local** organizations and enterprises, British Columbia Ministry of Sustainable resource Management, British Columbia Ministry of Forests, and **local** and regional government.
- 4.3 Forest areas that protect the water supply of the **local** community and individual water users identified through consultation. Sources of information include First Nations communities, **local** communities, **local** organizations and enterprises, British Columbia Ministry of Water, Land and Air Protection, British Columbia Ministry of Forests, British Columbia Ministry of Sustainable Resource Management, and **local** and regional government.
- 4.4 Forest areas that are of cultural, religious or spiritual significance for the **local** community, or otherwise critical to its traditional cultural identity identified through consultation. Sources of information include First Nations communities, **local** communities, **local** organizations and enterprises, British Columbia Ministry of Sustainable Resource Management, British Columbia Ministry of Forests, and **local** and regional government.

Reference:

- Bibby, C.J. 1992. Putting biodiversity on the map: *Priority areas for global conservation*. Washington, D.C.: Integrated conservation and Development Project (ICDP).
- Ricketts, Taylor, Dinerstein, Olson, Loucks et al. 1999. *Terrestrial Ecoregions of North America, a conservation assessment*, World Wildlife Fund/United States and Canada, Island Press.

High grading: A logging operation in which only the higher value trees (based on species, size and quality) are removed from the stand, with no consideration for the quality of the remaining trees left behind, often felled but unused (Dunster & Dunster, 1996).

Hydrologic assessment: An evaluation of water-related aspects of the environment, usually related to environmental risk or impacts resulting from past or proposed management activities; at the *watershed level* usually includes watershed and sub-basin delineation, mapping of **hydrologic features**, stream classification and evaluation of **equivalent clearcut area (ECA)**, road density, sediment sources and reconnaissance channel morphology; *detailed assessments* are site specific assessments relating to specific road segments or cutblocks (e.g., potential for diversion of surface and/or subsurface drainage, increase ECA over unstable terrain or downstream hydrologic impacts in areas of human habitation), or stream reaches (stream crossings, culvert size or flooding potential). Stream classification as part of a watershed level assessment may be based on airphoto interpretation or predictive models, while detailed assessments require field classification (See also Detailed terrain assessment – the two may be combined when appropriate).

Hydrologic Features: Water-related features visible at the land surface, such as stream channels, lakes, springs, seepage zones and wetlands.

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) (FSC-AC, February 2000).

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) (FSC-AC, February 2000).

In the BC context this term refers to First Nation(s).

Integrated pest management (IPM): An ecological method of pest control that relies on a combination of operational approaches to reduce damage to the forest rather than to eliminate the pest. An important goal of IPM is to minimize environmental impact. IPM techniques may include the use of natural predators and parasites, genetically resistant hosts, environmental modifications, and when necessary and appropriate, **chemical pesticides**.

Integrated riparian assessment: a process for developing, implementing and monitoring a riparian management strategy; the process includes a series of interrelated assessments focussed on defining the role of various riparian areas in maintaining the **ecological integrity** of aquatic **ecosystems** in a specified **riparian assessment unit** (e.g., a watershed); these assessments then form the basis for the development and implementation of a riparian management strategy, and a monitoring program for use within an adaptive management framework. (See also **Riparian assessment unit** and the Annex P6a, Requirements for Riparian Management, for more information.)

Joint management agreement: In the FSC-BC context, a **joint management agreement** is an agreement made between a forest **manager** and a First Nation(s) with the purpose of going beyond consultation, and into jointly setting goals, objectives, strategies, implementation, restoration and monitoring of the forest within the management unit. This can range from a relatively few areas of common interest to a quite thorough integration of industry and First Nation ideas throughout the whole **management plan**. A **joint management agreement** is not a substitute for consultation on the **management plan**, but rather is an enhanced form of consultation.

For purposes of FSC-BC, characteristics of a good **joint management agreement** include:

- ❑ The agreement is written in clear and unambiguous language.
- ❑ The **joint management agreement** is approved by the decision-making body or bodies as set out in the protocol agreement.
- ❑ Financial, technical or logistical capacity-building support, in proportion to the scale and intensity of operations, is available to the First Nation(s) where required to assist with development of the **joint management agreement**.

The agreement contains at a minimum:

- ❑ protection measures described in Criteria 3.2, 3.3 and 3.4;

- ❑ collaboratively developed objectives and strategies related to matters of importance to the First Nation(s) (e.g., revenue sharing, access to resources, training and employment, habitat restoration, cedar management, non-timber forest product management strategies);
- ❑ a process for involving First Nation(s) in collaborative development of all or part of the **management plan**;
- ❑ an appropriate consultation process (e.g., similar to that outlined in **consulting with the First Nations**, this Glossary) for consulting on any part of the **management plan** not covered by collaborative development; and,
- ❑ provisions for reviewing the **joint management agreement** and its effectiveness, and for renewal of the agreement.

Lakeshore management zone: The portion of a riparian area located adjacent to a **Lakeshore Reserve Zone**, or directly adjacent to a lake where there is no **Lakeshore Reserve Zone**, where management activities are designed to maintain or restore riparian functions and/or maintain the integrity of adjacent **Lakeshore Reserve Zone**.

Lakeshore Reserve Zone: The portion of a riparian area located adjacent to a lake where road construction and forest harvesting are prohibited, except where required for restoration of riparian functions.

Lands, territories and resources: Is the same as the FSC definition of **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." (See FSC definition of **Indigenous lands and territories**).

In the BC context, where Treaty definitions or geographic interpretations of a First Nation's **lands, territories and resources** do not exist, the default definitions used are the FSC-BC Glossary definitions and the geographic interpretations used are the First Nation(s)' interpretations. Where Treaty definitions or geographic interpretations of a First Nation's **lands, territories and resources** do exist, the definitions or interpretations provided therein are used. (See Glossary definitions of "**Indigenous lands and territories**", "**resource and tenure rights**", and "**sites of special cultural, ecological, economic, or religious significance**").

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 (FSC-AC, February 2000). In the BC context, see definition of **landscape level**.

Landscape level: At a spatial scale above a single plant community or forest stand and below a region (See also definition of **Landscape**). This term is used in the generic sense, and although similar, is *not* intended to be synonymous with "**Landscape Unit**," a defined planning area under the *Forest Practices Code*, usually between 50,000 and 150,000 ha in size, with boundaries based primarily on topographic or geographic features such as a watershed or group of watersheds.

Landscape Unit - See **Landscape level**

Legal and customary rights: In the BC context, **legal and customary rights** means **Aboriginal Rights and Title**, which are largely self-defined by non-treaty First Nations, or Treaty Rights, which are mutually defined by First Nation and Federal Government at the time the treaty is settled.

Principle 3 and its four Criteria identify rights which specifically relate to FSC certification and which are protected at the Principle and Criterion levels. These rights, which may be modified by existing or future treaties, are:

- ❑ the right to “own, use and manage their **lands, territories and resources**”;
- ❑ the right to “control **forest management** on their lands and territories”;
- ❑ the right to identify their own “**lands, territories and resources**”;
- ❑ the right to freely and knowledgeably grant, withhold or withdraw consent for **forest management** within their lands and territories;
- ❑ the right to **delegate control** for **forest management** and revoke that delegation; and
- ❑ the right to protection or accommodation of resource and **tenure** rights, sites of special significance, and use of intellectual property.

(See also “**Aboriginal Rights and Title**”, “**free and informed consent**”, “**lands, territories and resources**”, and “**delegate control**”. FSC-BC Glossary).

Legal or customary tenure or use rights: In the BC context and for the purposes of Criterion 2.2, **legal or customary tenure or use rights** include, but are not limited to the following:

- ❑ guide outfitters licences/certificates;
- ❑ angling guide licences;
- ❑ registered traplines and trapping licences;
- ❑ easements and covenants;
- ❑ public and private rights of way;
- ❑ statutory **tenures** (e.g., licences, permits etc. under the *Land Act*, *Mineral Tenure Act*, *Range Act*, *Forest Act*);
- ❑ customarily or legally permitted uses of Crown land for gathering of **non-timber forest products**, hunting, fishing etc.;
- ❑ customarily or legally permitted uses of private land;
- ❑ rights or obligations related to construction, rehabilitation or maintenance of trails or other recreation facilities;
- ❑ rights to use public footpaths or roads (e.g. to access to well known landmarks, features or viewpoints);
- ❑ water use (licenced and unlicenced);
- ❑ common law rights of riparian owners; and,
- ❑ stream stewardship rights and obligations (by contract or pursuant to approvals, licences etc. under the *Water Act*).

Likelihood of landslides or landslide initiation: The likelihood that a landslide may occur. The BC FPC defines two kinds of **terrain stability mapping**: detailed and reconnaissance. Detailed mapping involves a five class terrain stability classification based on relative **likelihood of landslide initiation** (I – insignificant, II – very low, III – low, IV – moderate, V – high). Reconnaissance mapping involves a three class system (S – negligible likelihood roughly equivalent to detailed classes I – III, P - Potentially Unstable roughly equivalent to class IV, and U – Unstable roughly equivalent to class V). The FPC classes are defined according to the likelihood that a landslide(s) may occur following *conventional* timber harvesting (clearcutting) or road construction (sidecasting). (See also definitions of **Terrain mapping** and **Terrain stability mapping**, and FPC Mapping and Assessing Terrain Stability Guidebook 1999.)

Live wildlife tree: A live tree that provides **critical habitat** for wildlife; generally refers to trees with defects that produce habitats not present in healthy vigorously growing trees (e.g., mistletoe brooms, hollow cavities, forks).

Local: People are considered **local** where they permanently reside within daily commuting distance by car or boat from the **management unit**, or where they are part of the First Nation whose lands and territories contain or are contained within the **management unit**.

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 (FSC-AC, February 2000).

Local rights holder: A person who resides within or adjacent to the **management unit** and holds **legal or customary tenure or use rights** in the **management unit**.

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 (FSC-AC, February 2000).

Machine-free zones: designated areas where tracks and wheels of ground-based equipment are prohibited.

Management plan: The **management plan** as required under Principle 7 of these standards.

Management Unit: In BC Provincial forests, at a minimum the **management unit** contains the entire geographically defined legal or administrative area associated with a given **tenure** (e.g., Schedule A and B lands set out in a Tree Farm Licence; all chart/operating areas associated with a Forest Licence); or, in the case of a certification involving all **tenure** holders in a Timber Supply Area, Innovative Forest Practices Agreement management area or similar legally recognized area, the full extent of that legally recognized area constitutes the **management unit**.

Manager: The **manager** is the individual or legal entity that appears on the title documents for the land being certified, or on the relevant **tenure/lease**, and who ultimately has responsibility for ensuring the FSC-BC Regional Standards are met. However, because the way companies organize themselves differs, any given use of the word “**manager**” in the Standards is to be taken to refer to the individual or division of the title/**tenure** holder who has responsibility for the matter in question.

Marine shore management zone: The portion of a marine shore riparian area located adjacent to a **marine shore reserve zone**, or directly adjacent to a marine shore where there is no **marine shore reserve zone**, where management activities are designed to maintain or restore marine shore ecosystem functions and/or maintain the integrity of an adjacent **marine shore reserve zone**.

Marine shore reserve zone: The portion of a marine shore riparian area located adjacent to a marine shore where road construction and forest harvesting are prohibited, except where required for restoration of marine shore riparian functions.

Native species: A species that occurs naturally in the region; endemic to the area (FSC-AC, February 2000).

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 (FSC-AC, February 2000).

Natural Disturbance Regime (NDT): an area that is characterized by a broadly homogeneous natural disturbance regime and range of natural variability; in BC the five NDTs listed below are defined by the FPC Biodiversity Guidebook 1995 (for further information see the Guidebook and also **range of natural variability** and **compatible with natural disturbance regimes**).

NDT 1 – Landscapes with rare stand-replacing events.

NDT 2 – Landscapes with infrequent stand-replacing events.

NDT 3 – Landscapes with frequent stand-replacing events.

NDT 4 – Landscapes with very frequent stand-maintaining fires.

NDT 5 – Alpine tundra and subalpine parkland landscapes.

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** (FSC-AC, February 2000).

In the BC context, these areas are designated as a “**well-managed natural forest**” – an area with **natural forest** characteristics and a management regime that meet the requirements of Criteria 6.3 and/or 6.4 (See also definitions of **Other forest types**, **Plantation** and Restoration area).

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 (FSC-AC, February 2000).

In the BC context, this includes: fungi, lichens, flowers, seeds, roots, bark, leaves and other vegetation (or portion thereof), forest recreation, visual resources, and water, fish and wildlife utilized for human consumption. Wood or wood fibre is not included, although products that can be harvested from trees without tree mortality are included (e.g., harvesting of boughs, cedar bark or cones).

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 (FSC-AC, February 2000).

In the BC context “**other forest types**” are recognized (See also definitions for **Natural forest**, **Plantation** and Restoration area):

- a) **Poorly managed natural forest:** an area with sufficient alteration of natural forest characteristics and a history of past management practices such that neither the area nor the management regime meet the requirements of Criterion 6.3, but neither sufficient alteration of natural stand characteristics and/or a sufficiently aggressive management regime to be classified as a **plantation**; not acceptable for FSC certification without alteration of the management regime and designation as a restoration area.

- b) **Former plantations** (undergoing restoration): an area having present stand characteristics and past management practices consistent with a **plantation** management regime; the present and future management regime includes measures to restore and maintain the area as a natural forest that meets the requirements of Criteria 6.3.
- c) **Possible future plantation conversion**: an area with present characteristics of a natural forest, but with plans to implement a **plantation** management regime; conversion of these areas will be required to meet Criterion 6.10 and Principle 10.

Outstanding Dispute: A **dispute** is outstanding when a resolution to the **dispute** has not been achieved through a process as described in Indicators 2.3.1 or 4.4.4.

Plan for ongoing public participation: For the purposes of Criteria 2.2 and 4.4, a **plan for ongoing public participation** outlines the following aspects of an ongoing public participation process regarding the **manager's forest management** activities/issues relevant to FSC certification of the management unit, to the extent requested by **directly affected persons** and in a manner **appropriate to the scale and intensity** of operations: a) scope and objectives of the process; b) mechanisms for contacting **directly affected persons** and effectively communicating with them (e.g., accommodating language or other barriers to participating); c) forms of consultation (e.g., public advisory group, workshops, interactive website, one-on-one meetings); d) decision-making methodology; e) facilitation, technical support and record keeping; f) timelines that allow adequate time for response; g) roles, responsibilities and obligations of participants; h) provision for reasonable participant assistance where required to allow **directly affected persons** to participate; i) accountability for decisions; j) a process for reviewing and revising the **plan for ongoing public participation**; and, k) a list of participants.

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 (FSC-AC, February 2000).

In the BC context, **plantations** are mapped and designated areas of the **management unit** that are planned to be managed over the **long term** under a **plantation** management regime. **Plantation** management regimes are characterized by:

1. a *set of stand characteristics* that are present and observable on site, as a result of past and/or current practices,
2. a long-term *management regime* to maintain or intensify those stand characteristics, and
3. an *intent* to manage for economic or tree growth objectives to the exclusion of others.

Recognition of **plantation** management regimes requires the presence of all three of the following diagnostic parameters:

1. A portion or portions of the **management unit** where at least two of the following stand level characteristics of forest **ecosystems** are maintained in a highly altered state or eliminated (e.g., reduced to <60% of estimated natural levels):
 - ❑ tree species diversity (especially deciduous spp. and/or other non-commercial spp. with significance to biodiversity),
 - ❑ stand diversity (e.g., patchiness, presence of small openings, variability in tree species diversity, density and/or canopy layers),
 - ❑ stand structures and associated habitats resulting from pathogens or physical damage (e.g., forked stems, mistletoe platforms, hollow boles, dead tops),

- early successional habitats (e.g., berry patches for bears or browse for moose; brush and herbaceous species that provide nutrients and organic matter for soil fertility),
 - presence of mature and old trees,
 - snags (e.g., nesting and foraging areas for cavity nesters, woodpeckers and bats), or
 - coarse woody debris** (e.g., habitat for rodents and amphibians, organic matter, water storage, seedling substrate).
2. On that same portion(s) of the management unit, a long-term management regime that maintains highly altered **ecosystems** and regularly employs at least three of the following management practices and/or treatments:
- shortened rotation ages, often based on economic factors rather than natural disturbance patterns (e.g., an average rotation age <60% of the mean return interval for the dominant stand-replacing disturbance factor – e.g., fire, wind),
 - sanitation treatments (e.g., salvage logging of damaged or infected trees, thinning to eliminate trees with poor form)
 - even-aged/single-canopy layer management where multi-aged/multi-canopy layer stands are prevalent naturally
 - broad scale brushing and/or weeding (e.g., broadcast herbicide treatments or non-specific brushing, does not include manual seedling-specific methods)
 - stocking control (thinning or spacing, except where undertaken to meet defined habitat objectives),
 - mechanical site preparation (e.g., push-over logging, mounding, scarification)
 - fertilization, or
 - pruning (except where undertaken to meet defined habitat objectives).
3. Management objectives for that same portion(s) of the **management unit** that:
- a) include wood fibre and/or timber production as the primary objective, AND
 - b) do NOT include objective(s) to maintain or restore stand structural characteristics compatible with natural **forest management** as defined under Criterion 6.3.
-

Plantations in relation to the other possible types of forests in the **management unit** (See also definitions for **Natural forest**, **Other forest types** and **Restoration area**).

Forest management Types	Parameters			
	1 (>2 degraded ecosystem components)	2 (>3 intensive practices)	3 a) (wood/fibre as main objective)	3 b) (restoration objectives)
Plantation	Yes	Yes	Yes	No restoration objectives
Former Plantation Undergoing Restoration	Likely yes in the past and present, but there is evidence that restoration is occurring and that future conditions will meet requirements under Criterion 6.3.	Likely Yes in the past, but likely No in the present and future.	Likely No	Restoration objectives are present
Poorly Managed Natural Forest	Yes	Likely Yes	Yes or No	May be restoration objectives

Well Managed Natural Forest	No	Likely No	No	No need for restoration
Possible Future Plantation Conversion	Yes or No at present, Yes in the future.	Yes or No at present, Yes in the future.	Yes	No restoration objectives

Poorly managed natural forest – See **Other forest types**

Possible future plantation conversion – See **Other forest types**

Precautionary approach: Tool for the implementation of the precautionary principle (FSC-AC, February 2000).

In the BC context, the **precautionary approach** is defined as follows: The forest **manager** will often be required to act with incomplete knowledge of cause and effect relationships, and therefore a **precautionary approach** includes the following:

- ❑ The **manager** avoids actions that may lead to irreversible changes to **ecosystem function** and resilience.
- ❑ Alternative management strategies are developed and evaluated, including the alternative of no management intervention, to identify alternatives that are least likely to impair the viability of the species or **ecosystem**.
- ❑ The onus is on the **manager** to demonstrate that proposed management activities are not likely to impair **ecosystem function** and resilience.
- ❑ When previously unanticipated threats to **ecosystem integrity** are identified or knowledge of **ecosystem** processes increases, the **manager** takes timely, efficient and effective corrective actions.
- ❑ The **manager** remains mindful of the needs of future generations.

Principle: An essential rule or element; in FSC's case, of forest stewardship (FSC-AC, February 2000).

Principles of conservation biology: in the context of protected reserve network planning, applicable concepts from conservation biology include: complete **ecosystem** representation, protection of core habitats to ensure the maintenance of viable populations of all **native species** in natural patterns of distribution and abundance, sustaining ecological and evolutionary processes and the maintenance of a landscape that is resilient to environmental change. Many conservation biology practitioners translate these principles into the need for a network of well distributed **protected reserves**, combined with adequate buffers and linkage areas to provide for dispersal, seasonal movement and adaptation to environmental change. The required size and distribution of the reserve network depends on the **ecosystems** and species present, landscape complexity and the extent and intensity of human disturbance in the surrounding matrix.

Prohibited chemicals:

The following Table presents the list of **chemicals** prohibited by the FSC-BC Regional Standards as required by Criterion 6.6. This list contains **chemicals** listed by the FSC Secretariat in the international listing current at the time this document was published. This listing, however, is under review by FSC.

<i>Name of Chemical</i>	<i>Reason for Prohibition</i>
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aldicarb	WHO Table 1
aldrin	CHC
benomyl	Table 4 in RL&A2000
carbaryl	Table 4 in RL&A2000
chlordane	CHC
chlorobenzilate	CHC
chlorothalonil	CHC
2,4-D	CHC
DDT	CHC
dalapon	CHC
diazinon	Table 4 in RL&A2000
dicofol	CHC
dieldrin	CHC
dienochlor	CHC
dimethoate	Table 4 in RL&A2000
endosulfan	CHC
endrin	CHC
gamma-HCH, lindane	CHC
heptachlor	CHC
hexachlorobenzene	WHO Table 1. CHC
mancozeb	Table 4 in ref. RL&A2000
methoxychlor	CHC
metolachlor	Table 4 in ref. RL&A2000
mirex	CHC
oryzalin	Table 4 in ref. RL&A2000
oxydemeton-methyl, Metasystox	WHO Table 2
oxyfluorfen	Table 4 in ref. RL&A2000
paraquat	Table 4 in ref. RL&A2000
parathion	WHO Table 1
pentachlorophenol	WHO Table 2. CHC
permethrin	Table 4 in ref. RL&A2000. Proposed for permitted use in nurseries with minimal impacts on insects and aquatic systems.
quintozene	CHC
simazine	Table 4 in ref. RL&A2000
sodium cyanide	WHO Table 2
2,4,5-T	CHC
trifluralin	Table 4 in ref. RL&A2000
toxaphene (camphechlor)	CHC
warfarin (1080)	WHO Table 2. Proposed for permitted use against exotic mammal pests, using officially approved operators and traps.
Pesticides containing	lead (Pb), cadmium (Cd), Arsenic (As), or mercury (Hg).

Reference:

Radosevich, S., M.Lappé and B.Addlestone. 2000. Use of Chemical Pesticides in Certified Forests: Clarification of FSC Criteria 6.6, 6.7 and 10.7. FSC-USA.

Protected reserves: Mapped areas designated by the **manager** for long-term protection from development; harvesting and road building are generally prohibited in reserves, except where used as part of a restoration plan (e.g. fuel reduction in association with controlled burning in fire-maintained **ecosystems**), or to meet the objectives for specific reserves (e.g. fire control, removal of invasive species). Individual reserve units less than 5 ha in size or less than 4 tree heights wide do not meet the requirements of a reserve for biodiversity, unless it can be demonstrated they meet specific **landscape level** habitat objectives (e.g., generally not individual stand level retention wildlife tree patches). Where **dynamic reserves** are utilized within a protected reserve network, the **dynamic reserves** are located in areas dominated by younger stands with the highest frequency of stand-replacing disturbance events, while the permanent portions of the network are located in areas with a lower frequency of stand-replacing disturbances and where older stands are more prevalent (See also **Dynamic reserves** and Guidance Material on a Planning Approach to Meeting the FSC-BC Regional Certification Standards).

Province: The responsible ministry/agency of the **Province** of British Columbia.

Qualified specialist(s): Individuals whose expertise qualifies them to carry out work (e.g. assessments, design of management practices, etc.) required by the FSC-BC Regional Standards, taking into consideration the following:

- professional ethics and independence;
- accountability;
- experience;
- training;
- formal qualifications;
- familiarity with the FSC-BC Regional Standards;
- familiarity with the **ecosystem** conditions and/or cultural/social factors relevant to the management unit; and,
- commitment to professional standards of research/field work.

Range of natural variability (RONV): The range of dynamic change in natural systems in the last 2000 years prior to the influence of European settlers; it includes consideration of the range of **ecosystem** conditions such as seral stage distribution, patch size distribution, stand structure and disturbance regimes (i.e., frequency, intensity, spatial extent and heterogeneity of disturbances); FSC-BC includes First Nations' prehistoric management systems (e.g., burning) as an integral part of RONV; similar concepts include natural variability, historical range of variability, reference variability and reference **ecosystems** (See also Guidance Material on **Range of natural variability** and a Planning Approach to Meeting the FSC-BC Regional Certification Standards).

Recognizes and respects, recognized and respected: From the Oxford Concise Dictionary of Current English, 1995, to recognize [a legal or customary right of First Nations] is to acknowledge the existence, validity, character, or claims of that right. To respect that right contains two aspects: a) to avoid interfering with, harming, degrading, insulting, injuring or interrupting; and b) to treat with consideration, to heed or regard.

For purposes of FSC-BC, a legal and customary right is considered to have been recognized and respected when its existence has been acknowledged and damage to it or interference with it avoided, accommodated or compensated.

Resources and tenure rights: Include, but are not limited to the following:

- water, including community watersheds;
- fisheries, including fish habitat;
- non-timber forest products;**
- access routes to resources, including trails and culturally modified trees (CMTs);
- trap-lines, traditional or contemporary;
- guiding operations;
- cultural tourism;
- hunting areas, including wildlife habitat;
- gathering areas such as food, artisan materials;
- culturally-specific resources such as cedar for coastal cultures;
- Tribal Heritage Parks;
- timber and forestry areas;
- subsurface areas, such as mineral and oil deposits; and
- traditional land management, including intentional burning to enhance berry and wildlife habitat production.

Restoration areas: Mapped areas of poorly managed **natural forests** or **former plantations** that have been designated by the **manager** for restoration to **natural forests** that meet the requirements of Criteria 6.3 and/or 6.4; areas that have management objectives to restore **natural forest** characteristics within a timeframe appropriate to the characteristics being restored; and that have restoration activities occurring on the ground to meet those objectives (See also **Other forest types**).

Right-of-way clearing width: the area outside a cutblock and beyond the **road disturbance width** that has trees and/or other vegetation removed during road construction or road maintenance.

Riparian assessment unit: the area within which a single **integrated riparian assessment** is completed, and on which the riparian reserve and management area budgets are applied; for most stream- and river-based assessments the assessment unit would be a watershed or group of watersheds (e.g., a face unit); for plateaus or coastal plains, a **Landscape Unit** or a **BEC variant** within an **ecosection** may be more appropriate (See also **Integrated riparian assessment** and the Riparian Assessment Annex P6a, Requirements for Riparian Management, for more information).

Riparian classification: Classification of streams, lakes and wetlands based on various characteristics; for the purposes of the FSC-BC Standards classification, includes factors such as fish presence, stream channel width, domestic water licence presence, distance upstream from fish-bearing areas, wetland size, lake size.

Riparian management area: The portion of a riparian area of influence that includes the **riparian reserve zone** and the **riparian management zone**.

Riparian management zone: The portion of a riparian area located adjacent to a **riparian reserve zone**, or directly adjacent to a stream or wetland, where management activities are designed to maintain or restore riparian functions and/or maintain the integrity of adjacent **riparian reserve zones**.

Riparian reserve zone: The portion of a riparian area located adjacent to a stream or wetland where road construction and forest harvesting are prohibited, except where required for stream crossings or restoration of riparian functions.

Road disturbance width: on sloping ground with fill or sidecast material unfavourable to tree growth, the distance extending from the top of the cut to the point where the fill/sidecast material is less than 20 cm deep; on sloping ground with fill or sidecast material favourable to tree growth, the distance extending from the top of the cut to the outside edge of the running surface; on flat ground, the width of the running surface plus any ditches and berms that are made of unfavourable soil material and are greater than 20 cm deep.

Significant non-compliance: Non-compliance is significant either:

- ❑ when it results in or is likely to result in an adverse change from existing conditions that affects persons or the environment; or,
- ❑ because of factors such as:
 - the magnitude of the non-compliance event or conditions created;
 - the frequency of the non-compliance;
 - a high degree of concern from employees or the public;
 - the deliberateness (or intentionality) of the non-compliance;
 - the sensitivity of the values involved; or,
 - where non-compliance inhibits the ability of the public to provide meaningful input on proposed **forest management**.

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 (FSC-AC, February 2000).

Site series: See **Biogeoclimatic Ecosystem Classification (BEC)**.

Sites of special cultural, ecological, economic, or religious significance: Include, but are not limited to, sites relating to or associated with the following:

- ❑ Ceremonial/Spiritual/Religious (e.g. vision/spirit quest area repository for the dead, gathering place, sacred places);
- ❑ Traditional Oral History (e.g. origin story, legend);
- ❑ Cultural Landforms (e.g. named places, marker sites, legendary landforms);
- ❑ Supernatural Beings (e.g. supernatural areas);
- ❑ Transportation (e.g. grease trail, trading route, water route, portage area);
- ❑ Habitation (e.g. permanent village, seasonal residence, storage area);
- ❑ Recreational (e.g. gathering place, games or competition place);
- ❑ Cross-Cultural Interaction (e.g. first contact, trade with Europeans, or other First Nation(s));

- ❑ Education and Training (e.g. where traditional skills, values or knowledge are conveyed).
- ❑ Evidence relevant to proof of **Aboriginal title**.

Social impacts: The consequences to society as a whole, communities, or individuals of the **manager's** decisions and activities that alter the ways in which people organize to meet their needs, live, work, play or interact.

Soil conservation hazards: Soil disturbance hazards; these indicate the sensitivity of a site to soil degrading processes which have the potential to result in negative impacts on soil fertility, forest productivity, water quality and/or development infrastructure (e.g., roads); frequency and/or intensity of these processes can be increased by poor planning or inappropriate application of management treatments, especially on sites with high hazards; categories of hazards include: soil **compaction** and puddling, soil displacement, waterborne soil erosion (surface soil or road and ditch), mass wasting and forest floor displacement (See FPC Mapping and Assessing Terrain Stability Guidebook (1999), Hazard Assessment Keys for Evaluating Site Sensitivity to Soil Degrading Processes Guidebook (1999) and Land Management Handbook 47 – **Silviculture** prescription data collection field handbook (2000).

Succession: Progressive changes in species composition and forest community structure caused by natural processes (nonhuman) over time (FSC-AC, February 2000).

Tenure: Socially defined agreements held by individuals or groups, recognised 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) (FSC-AC, February 2000).

Terrain mapping: Application of the BC Terrain Classification System to the mapping of the physical characteristics of the land surface (Howes and Kenk, 1997; Resources Inventory Committee, 1995). Terrain maps show the distribution of surficial materials, material texture, surface expression (landforms and material thickness), soil drainage, slope steepness and geomorphic processes such as mass movement. Where mapping objectives include **forest management** issues other than slope stability, other **hydrologic features**, soil characteristics or vegetation information may also be collected. (See also definitions of **Terrain stability mapping** and **Terrain and soil characteristics**.)

Terrain and soil characteristics: The physical and biological characteristics of the earth's surface: landforms and topography, geological materials, **hydrologic features**, and the natural earth-surface processes that bring about changes to landforms and surface materials. Terrain characteristics that appear on terrain and terrain stability maps are: surficial material, surficial material texture, surface expression (landform and material thickness), geomorphic processes, soil drainage and slope steepness. Soil characteristics commonly inventoried include surface soil and subsoil fine fraction textures, coarse fragment content, soil moisture regime, soil nutrient regime, depth to impermeable layer, and classification and depths of soil organic layers (See FPC Mapping and Assessing Terrain Stability Guidebook 1999 and Hazard Assessment Keys for Evaluating Site Sensitivity to Soil Degrading Processes Guidebook 1999, Howes and Kenk 1997 and definitions of **Terrain mapping** and **Terrain stability mapping**).

Terrain stability mapping: Terrain mapping combined with the interpretation of slope stability (landslide) hazards from the terrain data. Terrain stability maps generally show polygons labeled with landslide-initiation hazards (stability class) on a topographic base map. Additional features, such as landslide headscarps and debris flow tracks, are shown by representative ("on-site") symbols. Two kinds of **terrain stability mapping** are defined by the Forest Practices Code 1999: reconnaissance **terrain stability mapping** (RTS) and detailed **terrain stability mapping** (DTS). (See also definitions of **Terrain mapping**, **Terrain survey intensity level**, **Likelihood of landslide initiation** and Terrain stability field assessments, and the FPC Mapping and Assessing Terrain Stability Guidebook 1999).

Terrain survey intensity level (TSIL): The amount of field checking carried out for a terrain or **terrain stability mapping** project. Five TSILs are defined primarily according to the percentage of terrain polygons that are checked in the field: A: 75-100%; B: 50-75%; C: 20-50%; D: 1-20%; and E: no field checking. Full definitions for TSILs also specify rates of field progress per crew day, and average size of terrain polygons. TSIL is a significant measure of map reliability because mapping accuracy is often directly related to the amount of time spent in the field (See also definition for **Terrain stability mapping** and the FPC Mapping and Assessing Terrain Stability Guidebook 1999).

Threatened species: Any species, which is likely to become endangered within the foreseeable future throughout all or a significant portion of its range (FSC-AC, February 2000). In the BC context this term has a more specific meaning (See BC Conservation Data Centre (CDC) at <http://srmwww.gov.bc.ca/cdc/> or COSEWIC at <http://www.cosewic.gc.ca/>).

Timber harvesting landbase (THLB): Productive forest land within the **management unit** where the **manager** has determined that forest harvesting is acceptable and economically feasible, given the requirements for meeting the FSC-BC Regional standards, objectives for all relevant forest values, existing timber quality, market values and applicable technology. The THLB includes productive forest lands converted to non-forest use to facilitate **forest management** (e.g. roads, landings, borrow pits) as well as stand level retention areas not included in the protected reserve network. The THLB does not include productive forest lands mapped as a portion of the protected reserve network (e.g., riparian reserves, habitat reserves, unstable areas that meet biodiversity objectives) and other inoperable areas (e.g., low productivity sites, steep inaccessible terrain). Where **dynamic reserves** are present, the portions NOT meeting the criteria for counting as part of the protected reserve network are considered part of the THLB (i.e. age <80% of the estimated mean stand replacement interval.) (See also **Dynamic reserves**).

Traditional knowledge: Includes, but is not limited to knowledge of:

- ❑ **local** behaviour, distribution or cycles of fish, wildlife and plant life;
- ❑ broader climatic changes or cycles;
- ❑ local **ecosystem** or geomorphologic responses to natural or human disturbances;
- ❑ **local** population densities or changes in fish and wildlife;
- ❑ qualitative information about the utility of a variety of medicinal, edible, or material resource plants;
- ❑ requirements or activities needed to maintain or enhance local **ecosystems**.

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 (FSC-AC, February 2000).

Variant: See **Biogeoclimatic Ecosystem Classification (BEC)**.

Well-managed natural forest – See **Natural forest**

Indicators for Compliance with FSC Principles and Criteria in British Columbia

The following sections present the Indicators required of forest managers for compliance with the FSC Principles and Criteria in British Columbia and Verifiers provided for use by certification bodies in verifying forest managers' compliance. Only Indicators are requirements of forest managers.

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.*

- 1.1.1 The **manager** has a compliance management system that is **appropriate to the scale and intensity** of operations and at a minimum includes the following:
 - a) up-to-date copies of **applicable legislation and guidebooks** are maintained by the **manager** and made accessible to appropriate personnel (electronic access is acceptable);
 - b) where the **manager** has standard operating procedures, they are up to date, appropriate for achieving compliance, and implemented; and,
 - c) the **manager** regularly performs and documents compliance inspections.
- 1.1.2 Personnel who plan and implement management activities demonstrate knowledge of legal, regulatory and administrative requirements relevant to their responsibilities.
- 1.1.3 **Forest management** planning and operations comply with **applicable law** to the extent that:

- a) input or requirements (e.g., referral comments, recommendations from the Forest Practices Board, letters of advice/authorizations under the Fisheries Act) concerning compliance with the intent of the law, that are communicated to the **manager** by **agencies responsible for enforcement or auditing of laws affecting forest management**, are acted on;
 - b) compliance inspections and the **manager's** record with agencies responsible for enforcement or auditing of laws affecting **forest management** demonstrate neither **significant non-compliance** nor systematically recurring non-compliance with the law; and,
 - c) there is no observed evidence of **significant non-compliance** in plans or on the ground operations, or identified through evidence provided by **directly affected persons** or interested parties (e.g., citizen's monitoring groups).
- 1.1.4 The **manager** demonstrates that corrective actions have been taken in relation to any occurrences of non-compliance, including measures to prevent future occurrences.

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

- 1.2.1 The **manager** pays stumpage for the full scaled volume of all logs from each cutting authority, as shown by cruise, scale and billing information maintained by **manager** and/or the provincial harvest and billing **database**, and demonstrates that all fees, royalties, taxes or other charges have been paid in a timely way in the manner prescribed by law or contract.

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.

- 1.3.1 The **manager** demonstrates respect for the spirit and intent of **binding international agreements** by:
- a) maintaining copies of the agreements (electronic access is acceptable); and,
 - b) demonstrating familiarity and taking action consistent with those aspects of the agreements that are relevant to operations associated with the management unit. (See Guidance Material on International Agreements).

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.

- 1.4.1 Situations where the **manager's** compliance with the law would preclude compliance with the FSC-BC Regional Standards, or vice versa, are documented.

- 1.4.2 Where a **conflict** is found to exist, appropriate steps are taken, and documented, to ensure that the FSC-BC Regional Standards are met in the present and can be met in the **long term** in the management unit, including written evidence of necessary government approvals, designations, authorizations, or exceptions/ exemptions from legal requirements.

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

- 1.5.1 The **manager** has measures in place to protect the **management unit** from illegal/unauthorized activities, (e.g., boundary notices, gates if absolutely necessary).
- 1.5.2 The **manager** has procedures for reporting illegal harvesting, settlement or other unauthorized activities to appropriate authorities; these procedures are known to relevant personnel, and where such activities are detected during management activities they have been duly reported.
- 1.5.3 Through appropriate documentation, the **manager** makes personnel and/or contractors aware of agreements regarding First Nations harvesting (areas, amounts) and settlements (e.g., temporary hunting shelters) agreed to in protocols or plans under Principle 3, that might otherwise be considered unauthorized activities.

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

Failure to meet Criterion 1.6 will result in a major failure of Principle 1.

- 1.6.1 The **manager** has made a publicly available, written commitment to adhere to the FSC-BC Regional Standards over the **long term**, which is signed off by the board of directors and/or equivalent senior authority, and included in the **management plan**.
- 1.6.2 Full disclosure is made of all forest areas over which the **manager** has some management responsibility, and if the **manager** does not have, or is not currently seeking, certification in all of these, specific controls are in place to ensure that there is no risk of confusion being generated as to which areas, activities or products are certified and which are not.
- 1.6.3 There is no indication that First Nations or stakeholders are dissatisfied that the **manager's** activities, and/or stewardship of forest lands other than the **management unit** demonstrates long-term commitment to the FSC-BC Regional Standards, taking into account the seriousness of the complaint and the **manager's** actions to remedy the situation.
- 1.6.4 Within two years after achieving certification, the **manager** has in place a timetable for achieving certification of all the **manager's** lands in BC, and the **manager** demonstrates continuous progress towards moving all of their lands in BC toward FSC certification.

Principle 2: Tenure and Use Rights and Responsibilities

Long-term tenure and forest use rights to the land and forest resources shall be clearly defined, documented and legally established.

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

2.1.1 The **manager** has the legal right to manage the lands and to utilize the forest resources for which certification is sought, in one of the following circumstances:

- a) the **manager** is named on the certificate of title for the area of land for which certification is sought and there are no reservations or charges that would constrain the **manager's** right to manage the lands and utilize the forest resources for which certification is sought;
- b) the **manager** has **customary rights** (e.g., **Aboriginal title**) to manage the land and utilize the forest resources in the management unit;
- c) the **manager** has an area-based **tenure** or lease that is legally eligible to be renewed or replaced over a time period sufficient to achieve the long-term management objectives set out in the **management plan** (e.g., the **manager** has a Tree Farm Licence, Woodlot Licence, Community Forest Agreement); or,
- d) the **manager** has a replaceable, volume-based **tenure**, and the following requirements are met:
 - either the **Province** and the **manager** jointly apply for certification; or, the **Province**, at the time of the **manager's** certification application, provides written assurance that any permits, licences or plans issued in or for the **management unit** will require adherence to relevant portions of the FSC-BC Regional Standards, and the **manager's management plan** and supporting operational plans; and,
 - where the **Province** determines harvest levels for a larger land area containing the **management unit** (i.e., for a Timber Supply Area) the **Province** has assigned a portion of the harvest to the **management unit** as a designated area within the Timber Supply Area, and the **Province's** projections of harvest from the **management unit** are consistent with those calculated in accordance with Criterion 5.6.

Failure to meet Indicator 2.1.1 will result in a major failure of Principle 2.

2.1.2 Where the **manager** has a non-replaceable licence, the **Province**, either alone or jointly with the **manager**, applies for certification of the management unit.

2.1.3 A legally documented description of the lands over which the **manager** has rights, and for which certification is sought, including a properly annotated map, is included in the **management plan**. In the case of a volume-based **tenure**, a map showing the **manager's** chart/operating area, accompanied by written confirmation from the **Province** of the **manager's** rights in this area, is included.

- 2.1.4 Where the **manager** does not have title, the owner/**Province** does not impose constraints that prevent the implementation of the FSC-BC Regional Standards or the **management plan** in the management unit.
- 2.1.5 Where **tenure** and forest **use rights** in the **management unit** are not held by a single **manager**, the management activities of other legal **tenure** holders do not undermine the achievement of **management plan** objectives.
- 2.1.5 (i) There is no observed evidence of activities of other **tenure** holders in the **management unit** that undermine the achievement of **management plan** objectives.

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.*

- 2.2.1 In proactive consultation with **local** people, the **manager** identifies, documents and, where appropriate, maps any **legal or customary tenure or use rights** in the **management unit** held by one or more people who reside within or adjacent to it.
- 2.2.2 The **manager**:
- obtains **free and informed consent from local rights holders** to any portion of the **management plan** that affects their rights and resources; and,
 - if **local rights holders dispute** that current or proposed management protects their rights and resources, the **manager** implements recommendations developed through a Criterion 2.3 **dispute** resolution process that protect their rights and resources, to the extent that these rights are consistent with the FSC-BC Regional Standards.

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.*

- 2.3.1 Acting in good faith, the **manager** and the disputant(s) develop and implement a mutually agreed-to process to address **disputes** related to **tenure** claims and **use rights**.
- 2.3.2 To assist the mandatory consideration of **disputes** in the certification assessment of Criterion 2.3, the **manager** maintains a record of **disputes** and the status of their resolution, including evidence related to the **dispute** (whether generated internally, from outside experts or provided by disputants), and documentation of steps taken to resolve the **dispute**.
- 2.3.3 The **manager** is not involved in **outstanding disputes** of substantial magnitude involving a significant number of interests in relation to the management unit, taking into account the factors including the following:

- a) whether the **dispute** involves **local rights holders**, **local** forest workers, or **local** residents;
- b) whether the **dispute** involves the legal or **customary rights** of First Nations;
- c) the range of issues and/or interests involved;
- d) whether the potential impacts on the disputant(s) are irreversible or cannot be mitigated; and /or
- e) whether the **dispute** involves issues related to meeting the FSC-BC Regional Standards.

Note: Failure to meet Indicator 2.3.3 will result in a major failure of Principle 2.

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 recognised and respected.

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.

Indicators of Recognition and Respect

3.1.1 The **manager recognizes and respects** the **legal and customary rights** of the First Nation(s) over their **lands, territories and resources**.

3.1.1(i) First Nation(s) formally indicate, clearly, unambiguously and normally in writing, that their **legal and customary rights** over their **lands, territories and resources** have been recognized and respected.

3.1.1(ii) First Nation(s) interests or concerns are clearly incorporated in the **management plan**.

Failure to meet Indicator 3.1.1 will result in a major failure of Principle 3.

3.1.2 At the request of the affected First Nation(s), the agreements outlined in 3.1.3 and 3.1.5 below are written so they:

- a) are without prejudice to treaty, land claims settlements, or agreements the First Nation(s) may reach with government;
- b) cannot be construed that the First Nation(s) accept Provincial Crown title or extinguish their own **Aboriginal title**, and,
- c) do not derogate from their **Aboriginal rights**.

3.1.3 The **Manager** has negotiated a protocol agreement(s) with relevant First Nation(s) that provides for the nature of the relationship between the parties, including:

- a) how the parties will establish and conduct their relationship;
- b) the roles and responsibilities of the parties;
- c) the interests of the parties;
- d) a description of appropriate decision-making authorities for all parties; and,
- e) provides the framework for subsequent agreements necessary to give effect to the protocol.

Failure to meet Indicator 3.1.3 will result in a major failure of Principle 3.

- 3.1.4 Where a **dispute** arises an effective and fair resolution process is available to address the **dispute** (See **dispute** resolution under Criterion 4.5).

Indicators of Consent and Control

- 3.1.5 The **manager** has obtained **free and informed consent**, normally in writing, for the **management plan** from the appropriate First Nation(s) by either:
- a) jointly developing the plan according to the process set out in a **joint management agreement**, or,
 - b) **consulting with the First Nation(s)** on the plan.
- 3.1.5(i) The First Nation has the financial, technical and logistical capacity to enable them to participate on an informed basis in planning and decision-making.
- 3.1.6 Conditions under which consent has been given and under which it might be withdrawn, if any, are recorded in the **management plan**.
- 3.1.7 Where more than one First Nation is affected by the area being proposed for forestry activities, consent from each is ordinarily required.

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

- 3.2.1 **Forest management** activities within the **management unit** are planned and implemented in such a way as to maintain the **resources and tenure rights** of the First Nation(s), except in the following circumstances:
- a) the First Nation(s) are satisfied with measures to offset the loss or diminishment (e.g., restoration, replacement, monetary compensation, or other consideration); or,
 - b) the First Nation(s) agree to accept the loss or diminishment.

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

- 3.3.1 **Forest management** activities within the **management unit** are planned and implemented in such a way as to protect **sites of special cultural, ecological, economic, or religious significance** to the First Nation(s) except in the following circumstances:
- a) the First Nation(s) are satisfied with measures to offset the loss or diminishment (e.g., restoration, replacement, monetary compensation, or other consideration); or,
 - b) the First Nation(s) agree to accept the loss or diminishment.

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.*

- 3.4.1 Where mutually agreed, the First Nation(s) **traditional knowledge** is incorporated into the **management plan** and supporting operational plans and practices.
- 3.4.2 The First Nation(s) maintain control of their **traditional knowledge**, and are satisfied that fair compensation has been received for any **traditional knowledge** used.

Principle 4: Community Relations and Worker's 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 the opportunity for employment, training and other services.*

Employment

- 4.1.1 Using best available information, the **manager's** performance on the management unit, either directly or through contractors, in relation to the following measures, is tracked and made publicly available, in a manner **appropriate to the scale and intensity** of operations and that respects the confidentiality of individuals involved:
- a) local employees as a percentage of total employees;
 - b) percentage of contracted activities captured by local companies or individuals;
 - c) person days of employment on the management unit per 1000 cubic metres of wood harvested;
 - d) ratio of permanent employees to part-time employees and contractors;
 - e) wages and benefits paid as compared to BC industry average; and,
 - f) other measures identified through the Criterion 4.4 public participation process.
- 4.1.2 Appropriate to the scale of operations, and consistent with priorities and benchmarks established through protocols with First Nations under Criterion 3.1, and through the public participation process under Criterion 4.4, the **manager**:
- a) demonstrates best practices and improvement over time in relation to the measures outlined in Indicator 4.1.1; and,
 - b) is implementing policies/measures related to hiring/contracting, training and advancement to improve performance in relation to the measures outlined in Indicator 4.1.1.
- 4.1.3 The **manager** encourages employees to raise concerns without fear of reprisal, including mechanisms for confidential reporting, as demonstrated by:
- a) absence of retaliatory actions by the manager against whistleblowers; and
 - b) absence of disputes from current and/or past employees regarding the manager's respect for whistleblower protections.

- 4.1.4 The **manager** treats employees in a fair and equitable manner by adhering to labour/employment standards and human rights standards that demonstrate best practices in British Columbia (e.g., has an anti-harassment policy), as well as by meeting applicable legal requirements, and by contractually requiring contractors to do the same.

Failure to meet Indicator 4.1.4 will result in a major failure of Principle 4.

- 4.1.5 The **manager** ensures that contractors contractually agree to adhere to portions of the FSC-BC Regional Standards relevant to their activities on the management unit.

Training

- 4.1.6 The **manager** provides training opportunities, including collaboration with **local** training providers and institutions where necessary, such that:

- a) local people are not barred from employment on the management unit due to lack of training;
- b) employees and contractors are able to comply with the FSC-BC Regional Standards and legal requirements applicable to their responsibilities; and,
- c) employees receive skills upgrading to facilitate advancement within the manager's operations.

- 4.1.7 Training opportunities provided by the **manager** are consistent with training needs identified through consultations with workers, bargaining agents, contractors, First Nations and **local** community members as part of the public participation process under Criterion 4.4.

- 4.1.8 The **manager** assists displaced employees to make the transition to new work (e.g., providing as much notice as possible; planning, job search and counseling assistance).

Services

- 4.1.9 The **manager** uses **local** goods and services when sources are available locally, and takes the following steps to increase the amount of goods and services purchased locally over time:

- a) implementing a procurement policy for the supply of goods and services, that sets the date, location, terms and specifications for bidding so that **local** suppliers and contractors may readily bid (e.g., inviting bids for a portion of a larger contract package) or that otherwise builds local capacity (e.g., directly awarded contracts);
- b) giving **local** suppliers/businesses a right of first refusal on contracts for the supply of goods and services (or other measures of similar effect, e.g., awarding contractors to **local** suppliers that are within 10% of other bids);
- c) eliminating corporate policies that preclude use of **local** suppliers of goods and services; and,
- d) working with **local** suppliers to facilitate mutually beneficial solutions where obstacles exist to obtaining goods and services locally.

- 4.1.10 On an annual basis the **manager** documents and makes publicly available information regarding the percentage of total value of goods and services purchased locally.

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

- 4.2.1 The **manager** develops and implements a safety program to meet or exceed occupational health and safety regulations, which includes assessing new forest practices for hazards and developing/communicating appropriate safety measures in relation to them, and ensuring that workers are informed about potential health and safety risks, including provision of full information about the contents of **chemicals** used.
- 4.2.2 The **manager's** operations have a consistently low accident frequency rate.
- 4.2.2(i) Workers Compensation Board records and confidential employee interviews verify the **manager's** accident history.
- 4.2.3 Employees, including contract employees, indicate satisfaction with the **manager's** safety program and the **manager's** respect for workers own rights and responsibilities with regard to maintaining a safe work place, including the right to refuse unsafe work.
- 4.2.4 The **manager** contractually requires contractors/subcontractors to meet legal health and safety regulations and requirements under Criterion 4.2.

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 Labour Organization.*

- 4.3.1 The **manager's** actions demonstrate support for the rights of employees to organize and voluntarily negotiate collective agreements, including consistent compliance with applicable labour laws and collective agreements.
- 4.3.1(i) The **manager's** compliance with labour laws and collective agreements is verified by labour relations board/grievance records and confidential employee interviews.

Failure to meet Indicator 4.3.1 will result in a **major failure** of Principle 4.

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.*

- 4.4.1 The **manager** develops and implements a **plan for ongoing public participation** that accommodates the needs and preferences of **directly affected persons** regarding the scope and design of the public participation process, by:
- a) proactively contacting potentially **directly affected persons**; and,
 - b) soliciting, recording and acting on their input regarding the scope and design of the public participation process, and their feedback on the **plan for ongoing public participation** once developed.
- 4.4.2 **Directly affected persons** are provided with information used in making management decisions in a manner that allows them to understand potential impacts on their rights or interests, including reasonable technical or expert interpretation as required.
- 4.4.3 Steps sufficient to protect the rights or interests of **directly affected persons** are developed and agreed to through the public participation process, and implemented by the **manager**, to the extent these rights or interests are consistent with the FSC-BC Regional Standards.
- Failure to meet Indicator 4.4.3 will result in a major failure of Principle 4.
- 4.4.4 Where the **manager** and **directly affected persons** fail to reach agreement through the public participation process, a mutually agreed-to **dispute** resolution process is used.
- 4.4.5 When it is evident from the public participation process that further evaluation of **social impacts** is needed, the **manager** works with **directly affected persons** to further evaluate the impacts and ways to address them.

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.*

- 4.5.1 Where a **local** person or people have provided the **manager** with a **grievance notice**, the **manager** takes the following actions to resolve the grievance:
- a) in the case of a **grievance involving potential loss or damage** related to the **manager's** forestry activities, the **manager** refrains from carrying out the activity(ies) until: a) the **manager** satisfies the **grievor(s)** that the activity(ies) will not cause loss or damage; or, b) effective measures are in place to protect the **grievor(s)** from the potential loss or damage set out in the **grievance notice**; and,

- b) in the case of a grievance based on evidence that the **manager** is responsible for actual loss or damage affecting the **grievor(s)**' rights, property, resources or livelihoods, the **manager** provides the compensation (e.g., financial payment, restoration), if any, required to place the **grievor(s)** in the position that they would have been but for the activities of the **manager**, as agreed to by the parties or determined through arbitration.
- 4.5.2 Where agreement cannot be reached through consultation, negotiation or mediation on any of the matters set out in Indicators 4.5.1 an independent arbitrator(s) acceptable to both parties determines these matters according to the FSC-BC Regional Standards, particularly Criterion 4.5 and its Indicators.
 - 4.5.3 The **manager** documents steps taken to resolve grievances, including evidence related to proof of loss or damage and amount of compensation, whether generated internally, or provided by outside experts or the **grievors**.
 - 4.5.4 Where a grievance results in arbitration, the costs of arbitration payable by the parties are determined by mutual agreement or, failing agreement, by the arbitrator(s), on the basis of the facts of the case, including the good faith of the parties and the parties' ability to pay.
 - 4.5.5 Where it is determined, either by agreement or arbitration, that the **manager** is responsible for loss or damage to a **grievor(s)**' rights, property, resources or livelihood, the **manager** has measures in place to protect the **grievor(s)** from future loss or damage due to the **manager**'s activities.

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.*

- 5.1.1 In implementing the **management plan** (e.g., planning, inventory, monitoring, post-harvest management and resource protection), the **manager** strives towards economic viability within social and ecological limits.
- 5.1.2 The **management plan** and supporting operational plans describe activities in sufficient detail to enable costs of implementation to be credibly estimated.
- 5.1.3 The **manager's** ability to implement the **management plan**, including investments necessary to maintain the ecological productivity of the forest and provisions to manage for other forest values, is confirmed by business plans and other relevant documents that:
 - a) are **appropriate to the scale and intensity** of operations; and
 - b) include an evaluation of limiting factors.
- 5.1.4 For costs that are not otherwise addressed by FSC-BC Regional Standards, and **appropriate to the scale and intensity** of operations, the **manager**:
 - a) describes social and environmental costs, quantifying them if appropriate in physical units (e.g., kg of x wastes emitted, noise during y hours, tons of carbon sequestered), or in monetary terms if available (there is no expectation that costs will necessarily always be monetized);
 - b) considers costs identified through other relevant assessments or through public consultation, including opportunity costs for other forest-dependent activities and enterprises (e.g., estimated loss in income for **non-timber forest products** harvesters or wilderness tourism operators); and
 - c) evaluates the significance of such costs and implements measures to minimize them.
- 5.1.5 If monitoring, public consultation or research indicates that matters that are specifically addressed by the Standards are nevertheless generating social and environmental costs, then the **manager** assesses such costs and implements measures to minimize them.
- 5.1.6 When making investment and operational decisions, the **manager** sets benchmarks for reducing social and environmental costs over time and meets these benchmarks.

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

Local processing

- 5.2.1 The **manager** makes available for purchase a diversity of forest products from the management unit, in a manner appropriate to respond to the needs of **local** processors, at prevailing market rates, or at prices that cover the **manager's** opportunity costs.
- 5.2.2 The **manager** invests in or cooperates with the development of new or additional **local** processing capacity.
- 5.2.3 **Local** processors indicate their business is enhanced by opportunities the **manager** provides them

Optimal use

- 5.2.4 Without **high grading**, the **manager** captures the optimal value of forest products throughout the production cycle (e.g., planning, harvesting, stand management, sorting, processing and marketing).
- 5.2.5 The **manager** evaluates different options for enhancing the optimal use of forest products from the **management unit** and takes actions including one or more of the following:
 - a) plans and manages forest stands to produce higher value timber;
 - b) makes a diversity of forest products from the **management unit** available in a manner appropriate to respond to the needs of value-added processors, at prevailing market rates or at prices that cover the **manager's** opportunity costs;
 - c) ensures logs are sorted for delivery to the optimal end use;
 - d) pursues premium markets including those for certified wood and those for underutilized species and lower grades of wood; and/or
 - e) sells logs via a competitive log yard.

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

- 5.3.1 Consistent with the requirements for **coarse woody debris** and snags as set out under Indicator 6.3.6, waste that is generated through harvesting and on-site processing operations and that does not contribute to site productivity or **ecosystem functioning** is minimized.
- 5.3.2 The **manager** ensures felling, skidding/yarding, bucking, sorting and handling are carried out in a way that minimizes breakage and damage while optimizing log utilization, grade and value.

- 5.3.3 The **manager** ensures harvesting is carried out in a way that minimizes damage to the residual stand, other **ecosystem** components, and special features.
- 5.3.4 The **manager** ensures that relevant personnel receive appropriate instruction, training and/or incentives to minimize damage to the residual stand, other **ecosystem** components, and special features.

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

- 5.4.1 **Forest management** strengthens and diversifies the **local** economy by managing the forest to produce a range of timber products.
- 5.4.2 The **management plan** forecasts a diversity of timber products compatible with site conditions and **local** economic objectives for strengthening and diversifying the **local** economy over time.
- 5.4.3 In response to interest from the **local** community, the **manager** evaluates existing and potential production of **non-timber forest products** within the management unit, and identifies and implements **forest management** practices that produce a diversity of **non-timber forest products** compatible with site conditions and local objectives for strengthening and diversifying the **local** economy over time.
- 5.4.4 The **manager** cooperates with forest-dependent businesses and the **local** community to evaluate the management unit's current and potential contribution to the **local** economy through environmental amenities, fish and wildlife.
- 5.4.5 The **manager** identifies and implements **forest management** practices that are consistent with strengthening and diversifying the management unit's contribution to the **local** economy from environmental amenities, fish and wildlife.
- 5.4.6 Users are satisfied the **forest management** practices are consistent with strengthening and diversifying the management unit's contribution to the **local** economy from environmental amenities, fish and wildlife.

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

- 5.5.1 The **manager** maintains the range of **ecosystem services** provided by the management unit.
- 5.5.2 **Appropriate to the scale and intensity** of operations, the **manager** identifies **ecosystem services** provided by the management unit, drawing on existing information (e.g., relevant assessments, inventories, studies) and public consultation as applicable.
- 5.5.3 The **manager** assesses and describes existing and potential impacts of **forest management** activities on **ecosystem services**.
- 5.5.4 The **manager** identifies and implements measures required to maintain or enhance **ecosystem services**.

- 5.5.5 Direct **local** beneficiaries are satisfied the relevant **ecosystem services** have been adequately maintained.

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

- 5.6.1 The rate of timber harvest for the **management unit** is based on a documented and comprehensive analysis, incorporating the following:
- a) the management objectives and strategies for the full range of forest resources as set out in the **management plan**, including those for restoration;
 - b) practices employed to implement the strategies and operational approaches in the **management plan**, including those for restoration;
 - c) up-to-date inventories and the best available growth-and-yield data and projections;
 - d) land base reductions to account for areas that are reserved or unavailable for harvest due to economic or operational limitations;
 - e) volume reductions to account for stand level retention and recruitment for **ecosystem** components such as snags, wildlife trees and **coarse woody debris** ;
 - f) non-recoverable losses such as those resulting from fires, insects and disease; and,
 - f) reductions required to protect non-timber values and forest-dependent economic activities.

Failure to meet Indicator 5.6.1 will result in a major failure of Principle Five.

- 5.6.2 The rate of timber harvest is determined in a manner that adequately reflects reliability and uncertainty associated with inventory data, management assumptions, growth-and-yield projections, and analysis methodologies.
- 5.6.2(i) Sensitivity analyses are undertaken to examine the potential timber supply impacts of uncertainties in data, growth projections and management assumptions.
- 5.6.2(ii) Where sensitivity analysis indicates potentially significant impacts on timber supply, an adequate margin of safety is included when setting the rate of harvest.

- 5.6.3 Where the **manager** harvests or has the ability to control the harvest of **non-timber forest products**, the **manager** assures that the rate of harvest reflects the best available inventory and productivity data, provides for sustainable production, and is adjusted when monitoring indicates over-harvesting.

- 5.6.4 The **manager** demonstrates that the average of the present and projected annual timber harvests over the next decade, and averages of projected timber harvests over all subsequent decades, do not exceed the projected long-term harvest rate, while meeting the FSC-BC Regional Standards over the **long term**.

Failure to meet Indicator 5.6.4 will result in a major failure of Principle Five.

- 5.6.5 After ten years of FSC certification, the **manager** demonstrates that the decadal averages of actual timber harvests in decades subsequent to FSC certification have not exceeded the projected long-term harvest rate.
- 5.6.6 Actual rate of timber harvest in any given year is no more than 25% above the projected long-term harvest rate, unless:
- a) the **manager** has harvested an equivalent amount below the projected long-term harvest level within the last ten years and subsequent to FSC certification, or
 - b) the **management unit** has a long-term annual harvest level less than 10,000 m³

Principle 6: Environmental Impacts

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.

Inventory (See Guidance Materials on Inventory)

6.1.1 Based on the best available information, the **manager** assembles relevant inventory data to establish the regional and **landscape level** context for environmental impact assessment, including at a minimum:

- a) **biogeoclimatic ecosystem classification (BEC)** mapping to the **variant** level for all **ecosections** which occur within the management unit;
- b) percentage of Protected Areas by **BEC variant** and **ecosection** for the **BEC units** and **ecosections** that occur within the **management unit** (to a level below **BEC variant** where available, and **appropriate to the scale and intensity** of management and sensitivity of environmental values); and,
- c) extent and intensity of land use in surrounding portions of relevant **BEC variants** and **ecosections**; specifically including estimated percentage areas of **natural forest** converted to non-forest uses; **landscape level** habitat indicators (e.g., fragmentation, seral stage distribution); the scale and degree of detail is **appropriate to the scale and intensity** of management.

6.1.2 The **manager** collects and/or assembles reconnaissance level inventory information appropriate for **landscape level** planning and completion of a **management plan** for the **management unit** as a whole, including at a minimum:

- a) **natural disturbance regime** description (including information on frequency, size, distribution and degree of heterogeneity of natural disturbances at the landscape, **ecosystem** and stand levels);
- b) list of potentially occurring **native species** (including at a minimum indicator plants, vertebrates, and other species of concern); and,

- c) mapping of forest cover, BEC units to the **variant** level (or **site series** level PEM/TEM where required for habitat assessments or other assessments), **hydrologic features**, **terrain stability mapping (terrain survey intensity level D or E)**, cultural features, visual sensitivity, land use and other **tenures**.
- 6.1.3 As part of the operational management planning process for landscapes and/or watersheds in which road-building or timber harvesting is proposed over the next five years, inventories, assessments and/or appropriate information **databases** of **ecosystem** characteristics, resources and environmental values are completed and/or assembled, including at a minimum:
- a) **terrain mapping** (at **terrain survey intensity level B or C**), terrain interpretations (e.g. terrain stability, risk of sediment delivery) and interpretations for other **soil conservation hazards, appropriate to the scale and intensity** of operations, sensitivity of the terrain, and sensitivity of environmental values;
 - b) forest cover, including at a minimum, species composition, height class, age class, stocking and crown closure;
 - c) ecological classification to a level below the BEC **variant** (e.g., **site series** PEM/TEM), where **appropriate to the scale and intensity** of management and sensitivity of environmental values;
 - d) distribution of seral stages and patch sizes, including non-forest types;
 - e) watershed condition, including **hydrologic features** present and specific indicators of hydrologic risk (e.g., present and projected **equivalent clearcut area (ECA)**, extent of human-induced riparian disturbance, road density, channel stability ratings where appropriate, and trends in flow regimes and water quality based on available information);
 - f) in watersheds or sub-basins with significant levels of development or other indicators of potential channel sensitivity, **channel assessments**;
 - g) biodiversity information including species list of vertebrates (including presently occurring and previously extirpated) and **ecosystems** and **ecosystem** components required by those species (including **critical habitats**, geographic distribution and sensitivities such as access), preferably based on a reconnaissance field survey appropriate to the size and complexity of the **management unit** and other available studies or, at a minimum, based on information available from the BC and Canadian governments; and
 - g) where access-sensitive species or their habitats are present (e.g., grizzly bears, ungulate winter range), assessments to determine appropriate measures for the protection of those species and/or habitats, including measures for access management and incorporation of habitat areas for those species in the protected reserve network.

Failure to meet Indicator 6.1.3 will result in a major failure of Principle Six.

- 6.1.4 In areas proposed for road construction, timber harvesting, and/or other treatments that will likely affect water quality or stream channel integrity (e.g., fertilization), detailed maps of **hydrologic features**, including **riparian classification**, are completed in advance of initiating management activities. The maps include identification of fish-bearing streams and domestic and irrigation water sources.
- 6.1.5 Where road construction or timber harvesting is proposed: for areas rated with a moderate or high **likelihood of landslides**, areas rated as high or very high erosion potential, areas upslope of such hazardous areas (i.e. "gentle over steep"), or recharge areas for springs with domestic or irrigation water users; **detailed terrain assessments** and/or detailed **hydrologic assessments** are completed to assess the risks to the environment and provide recommendations on mitigation or other measures to reduce risk.
- 6.1.6 In areas proposed for timber harvesting, prior to preparing stand level prescriptions and selecting harvesting methods, inventories at the cutblock or stand level are completed, including at a minimum:
- a) stand structure, including stand age, tree age ranges, tree species composition by height and layer (i.e., stand and stocking tables);
 - b) frequency and sizes of **live wildlife trees** and snags, and relative amounts of **coarse woody debris** ;
 - c) presence of **aquatic habitats**, rare **ecosystem** features and/or other **critical habitats** identified at the site level; and,
 - d) basic soil information (e.g. fine fraction texture, coarse fragments, LFH, depth to impermeable layer, and drainage).

Risk/Impact Assessments (See Guidance Materials on Risk Assessment and Planning)

- 6.1.7 Based on the best available information and appropriate to the size and complexity of the management unit, the **manager** prepares a written description of the estimated **range of natural variability** including reference to **ecosystem** conditions and **ecosystem functioning**. This description serves as an environmental base case (i.e. benchmark or reference **ecosystem** conditions) against which to measure potential environmental changes or impacts resulting from proposed management activities.
- 6.1.7(i) The methodology, assumptions and information used to define the **range of natural variability** are documented.
 - 6.1.7(ii) The **manager** updates the **range of natural variability** description as new information becomes available.

Failure to meet Indicator 6.1.7 will result in a major failure of Principle Six

- 6.1.8 As part of the management planning process, an **environmental risk assessment** is completed, by comparing present and projected **ecosystem** conditions on the **management unit** to the **range of natural variability** (i.e.. "natural"). Increasing risk is defined as increasing deviation from natural. The risk assessment is **appropriate to the scale and intensity** of management activities, and the sensitivity of the affected **ecosystems**.

Inventory and Assessments Guide Management

- 6.1.9 Inventory information and the results of **terrain stability mapping**, soil conservation hazard assessments, **hydrologic assessments**, habitat assessments and access-sensitive species assessments guide management planning and operational implementation.

Failure to meet Indicator 6.1.9 will result in a major failure of Principle Six.

- 6.1.10 Where an assessment completed under Indicator 6.1.8 indicates that environmental impacts of proposed management activities pose significant risk to biodiversity or other environmental values, then:
- management activities do not occur; or,
 - the **manager** reduces the risk to a level comparable to that under RONV by employing an alternative management approach and/or mitigation measures; or,
 - the **manager** provides a written rationale that includes evidence the chosen option will not compromise **ecosystem integrity** in the broader context.

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.*

- 6.2.1 Habitats of red- and blue-listed species and plant communities (as defined by the BC Conservation Data Centre) and **threatened species** and **endangered species**, and species of special concern (as defined by the Committee on the Status of Endangered Wildlife in Canada) within a **management unit** are identified by field surveys or other means, and delineated on maps.
- 6.2.2 Where there are existing or potential habitats of red-listed, blue-listed, endangered or **threatened species**, or species of special concern, or red- or blue- listed plant communities present on the management unit, consistent effort is evident on the part of the **manager** to take actions on the **management unit** to minimize risk to the long-term persistence of those species and/or plant communities, by:
- protecting those habitats and/or plant communities by including them in the protected reserve network;
 - avoiding habitat alteration that may result in increased risk to those species' and/or plant communities' long-term persistence; and/or,
 - where necessary, restoring those habitats and/or plant communities to a suitable condition.

- 6.2.2(i) Where population information is available, it demonstrates that the population levels of applicable species have not decreased or failed to increase, due to the **manager's** activities within the management unit.
- 6.2.2(ii) Where habitat modeling for applicable species has been undertaken, it shows that proposed future management activities are not expected to contribute to increased risk to the species or limit recovery options.

Failure to meet Indicator 6.2.2 will result in a major failure of Principle Six.

- 6.2.3 Where a government recovery plan or species **management plan** has been prepared for a red- or blue-listed, **threatened** or **endangered species**, species of special concern or red- or blue-listed plant community whose habitat occurs within a management unit, the **manager** is implementing the recovery or species **management plan** in a manner appropriate for the management unit. While recovery or species management plans are under development, the **manager** takes steps that are within his or her control to facilitate survival and recovery of the species or plant community.
- 6.2.4 Relevant employees and contractors are able to recognize red- and blue-listed, **threatened** and **endangered species**, and species of special concern, and their habitats that occur within the management unit. When these are recognized, prompt notification is made to personnel who are capable of implementing prescriptions and practices designed to protect and promote the survival and recovery of the species, and these practices are implemented.
 - 6.2.4 (i) Training programs, standard operating procedures and/or protocols specify measures for dealing with unexpected encounters with red- and blue-listed, **threatened** and **endangered species**, and species of special concern, or their habitats during operational activities.
- 6.2.5 The **manager** cooperates with the government authorities to prevent the harming, harassing, capturing or taking of red- or blue-listed species, threatened or **endangered species**, or species of special concern within the management unit.

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.***

- 6.3.1 Portions of the **management unit** where previous management activities have resulted in conditions where **ecosystem** components or functions have not been maintained as required under Principles 6 and/or 9 (i.e. areas of poorly managed **natural forests** or former **plantations**) have been designated **restoration areas**, and it is evident that activities are planned and being implemented to restore those areas to conditions that are consistent with FSC-BC requirements in a timeframe consistent with the sensitivity of affected **ecosystems** (except areas under present and future **plantation** management regimes that meet the requirements of Principle 10 and/or Criterion 6.10).

Failure to meet Indicator 6.3.1 will result in a major failure of Principle Six.

a) Forest regeneration and succession

- 6.3.2 The present and projected application of silvicultural systems, including regeneration methods, results in present and projected landscape patterns and stand structures that:
- a) are maintained within the range of natural variability,
 - b) are presently outside the **range of natural variability**, but are being restored and managed such that they will be maintained within the **range of natural variability** in the future, or
 - c) where projected to be maintained outside the **range of natural variability**, a rationale is provided that shows the divergence does not compromise **ecosystem integrity** in the broader context.

- 6.3.2(i) Regeneration surveys confirm that successful and ecologically appropriate regeneration is occurring on disturbed forest lands.

Failure to meet Indicator 6.3.2 will result in a major failure of Principle Six.

- 6.3.3 When site preparation is utilized, the selection of methods balances the following factors: effectiveness of achieving management objectives and minimization of negative environmental impacts (including soil degradation).
- 6.3.4 At the landscape and stand levels, the spatial extent, temporal longevity and structural characteristics of non-tree-dominated early seral stages (i.e., herb and shrub stages), are **compatible with natural disturbance regimes** and meet the needs of early-seral-dependent species and cultural uses.
- 6.3.4(i) Where habitat modeling results are available, they confirm that habitat requirements for non-tree-dominated early seral stage habitats are not compromised by stand management activities such as weeding or brushing.

b) Genetic, species, and ecosystem diversity

Stand and Gene Level Issues

- 6.3.5 Regeneration methods maintain or enhance the structural and genetic diversity of forest stands by:
- a) showing a preference for natural regeneration; and/or
 - b) where necessary, using artificial regeneration methods (e.g., planting), with seed or stock produced from local provenances.

- 6.3.6 Seed trees, advanced regeneration or other sources of natural or artificial regeneration are selected to maintain species and genetic diversity.
- 6.3.7 Silvicultural treatments, including regeneration, maintain a diversity of tree species and stand types compatible with the **range of natural variability** at the **landscape level**.
- 6.3.8 **Silviculture** and stand management prescriptions for areas with stand-replacement, gap-replacement and fire-maintained **ecosystem** management regimes include objectives and measures for the maintenance and/or restoration of stand structure to conditions compatible with the **range of natural variability** at the stand and **landscape levels** (e.g., canopy complexity, **live wildlife trees**, snags, **coarse woody debris**).
- 6.3.8 (i) Where species habitat modeling or assessments are available, they indicate that stand level habitat supply is consistent with the long-term persistence of naturally occurring species dependent on those habitats (appropriate to the size and location of the management unit).
- 6.3.9 Within each **cutblock area** (>200 m wide), the retention of dominant and co-dominant green trees and snags is consistent with meeting objectives in Indicator 6.3.8, as patches and/or single trees, and exceeds the following minimum levels (stems/ha, of which a minimum of 25% are snags where present):

NDT 1		NDT 2		NDT 3		NDT 4	
ESSF	Other	ESSF	Other	ESSF	Other	PP	Other
12	8	15	10	12	8	4	8

- 6.3.10 Average stand level retention within **cutblock areas** in stand-replacement management regimes (including retention of dominant and co-dominant trees referred to in Indicator 6.3.9):

a) exceeds the following minimum levels of basal area (m²/ha):

NDT 1		NDT 2		NDT 3		NDT 4	
ESSF	Other	ESSF	Other	ESSF	Other	PP	Other
15	24	8	12	4	5	1	3

or,

b) is consistent with average and min/max ranges established through an assessment of the **range of natural variability** at the stand level and **landscape level**.

- 6.3.11 Stand level retention within **cutblock areas** in gap-replacement management regimes (including retention of dominant and co-dominant trees referred to in 6.3.9), exceeds the following minimum levels of retention (% of average basal area for natural mature and old stands on similar **ecosystems**):

NDT 1		NDT 2		NDT 3		NDT 4	
ESSF	Other	ESSF	Other	ESSF	Other		
70	75	65	70	60	65	Not Applicable	

- 6.3.12 Forest harvesting and other silvicultural treatments maintain or restore **coarse woody debris** in quantities and distribution that is **compatible with the range of natural variability** at the stand and **landscape levels**.

Landscape and Ecosystem Level Issues

- 6.3.13 **Forest management** maintains or restores a distribution of seral stages, patch sizes and interior habitat that are **compatible with the range of natural variability**.
- 6.3.13 (i) Comparisons, by BEC **variant**, between projected levels of old and mature forest, and natural levels calculated from estimated stand-replacing disturbance return intervals indicate that projected levels are **compatible with the range of natural variability**.
- 6.3.13 (ii) Where habitat modeling for patch size distribution or species assessments are available for interior-habitat-dependent species, they indicate that the projected patch size distribution and/or supply of suitable habitat is **compatible with the range of natural variability** and/or the long-term persistence of those species (appropriate to the size and location of the management unit).

Failure to meet Indicator 6.3.13 will result in a major failure of Principle Six.

- 6.3.14 The **manager** has wildlife and/or **landscape level** objectives for landscape **connectivity**, consistent with the long-term persistence of naturally occurring species, and is implementing management strategies that include **connectivity** corridor mapping and maintenance of mature and old forest landscape **connectivity** between various landscape components, stand types and key habitats, appropriate to the size and context of the **management unit** (See also Indicator 6.1.1).
- 6.3.15 The **manager** has objectives and strategies to manage access where required to meet non-timber objectives (e.g., to minimize displacement of access-sensitive species such as grizzly bears, to prevent human contamination of domestic watersheds, to protect cultural sites).
- 6.3.16 Access management measures are consistent with the recommendations from assessments for access-sensitive species (See 6.1.3 h) and other recommendations by **qualified specialists** (e.g., wildlife biologists, health officials).
- 6.3.17 Where they occur on a management unit, unique **ecosystems** (e.g., **antique forests**, rare **site series**), unique **ecosystem** features (e.g., caves, mistletoe platforms, mineral licks) and non-forest **ecosystems** (e.g., wetlands, grasslands, rock outcrops) are maintained or restored to a level that ensures their ecological functions are maintained.

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

- 6.3.18 **Forest management** maintains soil fertility and natural soil processes by:
- a) limiting **detrimental soil disturbance** to less than 7% of the **timber harvesting landbase**, or

- b) limiting **detrimental soil disturbance** to less than 10% of the **timber harvesting landbase**, where there are off-setting environmental, cultural or other non-economic benefits for the increases over 7%, and the benefits are explained in a written rationale.
- 6.3.18 (i) Soil disturbance survey results are consistent with meeting Indicator 6.3.18.
 - 6.3.18 (ii) Assumptions regarding roads, landings and other **detrimental soil disturbance** in timber supply analyses are consistent with meeting Criterion 6.3.18 (See also Criterion 5.6).
 - 6.3.18 (iii) A consistent effort to minimize **detrimental soil disturbance** is evident in planning, construction and implementation of road construction, timber harvesting and **silviculture** treatments.
- 6.3.19 Temporary access structures and unplanned **detrimental soil disturbance** are promptly rehabilitated.
 - 6.3.20 Where **detrimental soil disturbance** exceeds levels in Indicator 6.3.18, a plan is being implemented to rehabilitate sufficient area to meet the standard in a timely manner (<5 years).
 - 6.3.21 Where fertilizers or other soil amendments (e.g., pulp sludge, manure) are used, preference is given to non-chemical alternatives that are of equivalent effectiveness, and the **manager** verifies that the chemical composition of the fertilizers or soil amendments (including inert ingredients) are not in contravention of FSC requirements (See also Criterion 6.6 and Indicator 4.2.1).
 - 6.3.22 Where fertilizers or other soil amendments are used, baseline soil analyses are completed, or relevant data assembled, to determine the potential benefits and risks of detrimental changes to soil physical and chemical properties and to establish a baseline for monitoring long-term impacts.
 - 6.3.23 When fertilizers or soil amendments are used, effective measures are employed to avoid contamination of surface and ground waters, protect non-timber forest values and maintain long-term soil health (e.g., maintenance of soil organic matter, pH balance).
 - 6.3.24 Consistent effort is evident to minimize road **right-of-way clearing widths** to maintain the productive forest harvesting land base and minimize road impacts on forest habitats, and
 - a) average road **right-of-way clearing width** does not extend more than 3 m beyond either outside edge of the **road disturbance width**, or
 - b) where average road **right-of-way clearing widths** exceed 3 m beyond the **road disturbance width**, there is a rationale provided by a **qualified specialist** that justifies the excess width for reasons of slope stability, snow clearing, slash disposal, yarding or loading access, road maintenance or safety.

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.*

- 6.4.1 A network of **protected reserves** is established and managed within the **management unit**. The **manager** first identifies this network of **protected reserves** at multiple spatial scales (appropriate to the scale of operations), before planning for human uses or carrying out forest practices. The reserve network::
- a) is delineated on maps, and where applicable, includes mapping of **dynamic reserves** and dynamic reserve replacement areas,
 - b) has written objectives for each reserve area related to that area's contribution to maintaining or restoring **ecological integrity** (some areas may have compatible overlapping objectives, e.g., riparian protection, unstable terrain and visual management),
 - c) has an overall design that is consistent with the **principles of conservation biology**, and
 - d) meets the applicable minimum percentage area for ecosystem representation by BEC **variant** within the management unit, as determined by Table P6 - 1 (only the portions of the **dynamic reserves** that have reached an age of at least 80% of the estimated average return interval for stand-replacing events contribute to meeting this requirement).

Table P6 - 1. Minimum required area of protected reserves for ecosystem representation within a management unit by BEC variant, based on the level of protection in the surrounding area.

Context Outside of Management Unit	Management Unit Requirements ³
Percentage of Protected Areas ¹ by BEC variant, Ecoregion or ² BEC variant/Ecoregion	Minimum Reserves by BEC variant (%) ⁴
>20%	12
16.1-20%	15
12.1-16%	18
8.1-12%	20
4-8%	22
<4%	24

¹ Legally established long-term protected areas that are managed to maintain and/or restore biodiversity (principally includes BC Protected Areas and Federal Parks; where appropriate, potentially includes Wildlife Management Areas and private lands secured by legal covenants).

² Select the least constraining (See Guidance Material on Inventory).

³ Management units with long-term harvest levels below 10,000m³ and average stand level retention of >60% basal area are exempt from the requirements in the table. These small management units require a minimum of 12% of the naturally forested portion of the **management unit in protected reserves** regardless of context (See also Indicator 6.4.3).

⁴ Numbers refer to percentages of the naturally forested portion of the **management unit** applied by each BEC **variant**. Only the portions of the **dynamic reserves** that have reached an age of at least 80% of the estimated average return interval for stand-replacing events contribute to meeting these requirements (See also Indicator 6.4.3). Failure to meet Indicator 6.4.1 will result in a major failure of Principle Six.

- 6.4.2 The design and management of the reserve network contributes to the maintenance and/or restoration of **ecological integrity** by including at a minimum, areas whose size and distribution are sufficient to meet the following objectives:
- a) includes representation of **ecosystem** variation within the **management unit** at a level more detailed than the **BEC variant**, using characteristics appropriate to the **management unit** (e.g., **site series** groups, **enduring features**, landforms, forest type, productivity class), with consideration of the context of **ecosystem** representation in Protected Areas outside the management unit,
 - b) habitat requirements for naturally occurring species that are not provided for in a suitable condition in other parts of the **management unit** (e.g., **critical habitats** for red- and blue-listed or access-sensitive species, riparian feeding areas for grizzly bears, calving areas) consistent with applicable assessment results (See also Indicators 6.1.3, 6.2.1, 6.2.3, 6.5.11 and 9.1.1),
 - b) **connectivity** at the landscape and regional levels (including consideration of the landscape and regional context of the **management unit** and provision of suitable habitat linkages between **critical habitats** for wide-ranging species),
 - c) protection of rare and endangered **ecosystems** and **ecosystem** conditions that are or are predicted to be at risk (e.g., interior forest conditions, old seral conditions), and
 - d) scientific reference areas.
- 6.4.3 All **protected reserves** within **Natural Disturbance Types** 1 and 2, and at least 50% of the area of **protected reserves** in **NDTs** 3 and 4 are permanent designations with fixed locations. Where the **manager** has identified ecological benefits for management treatments that mimic natural disturbances in **NDTs** 3 or 4, up to a maximum of 50% of the area of **protected reserves** in those **NDTs** are managed as **dynamic reserves**.
- 6.4.4 Management treatments in **dynamic reserves** that are intended to mimic stand-replacing natural disturbances:
- a) are employed on a frequency (i.e. rotation age) that is at least 1.2 times the estimated average return interval for those disturbances;
 - b) include stand level retention significantly above the estimated average natural retention levels for those disturbances;
 - c) use natural regeneration; and
 - d) allow for natural stand development.
- 6.4.5 Management activities within **protected reserves** are limited to low impact activities compatible with the protected reserve objectives, except under the following circumstances:
- a) harvesting activities only where they are necessary to restore or create habitat to meet the objectives of the protected reserve, or to mitigate conditions that interfere with achieving the reserve objectives, or
 - b) road-building only where it is documented that it will contribute to the minimization of the overall environmental impacts within the **management unit** and will not jeopardize the purpose for which the reserve was designated.

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.*

- 6.5.1 Environmental damage resulting from landslides, snow avalanching, erosion and sedimentation is not significantly increased beyond the **range of natural variability** due to road construction or forest harvesting.
- 6.5.2 Road construction and forest harvesting do not occur on areas with a high **likelihood of landslide initiation**.
- 6.5.3 Road construction and forest harvesting do not occur on the following high risk areas, unless measures are implemented such that risk of landslide initiation is not increased:
- a) areas of moderate **likelihood of landslide initiation** and high or very high landslide-induced stream sedimentation hazard; or,
 - b) areas of moderate **likelihood of landslide initiation** and a high to very high likelihood of the landslide reaching areas of human habitation.
- 6.5.4 Harvesting within or adjacent to areas with a high or moderate **likelihood of landslide initiation** does not significantly increase windthrow hazards in those areas.
- 6.5.5 Road construction and harvesting do not occur in areas of high or very high road/ditch/surface erosion hazard and high or very high sediment delivery unless mitigative measures are taken that prevent erosion and sedimentation (e.g., minimizing soil disturbance, prompt revegetation).
- 6.5.6 In areas with a very high potential for snow avalanche initiation, forest harvesting does not occur. In areas with high potential for snow avalanche initiation, harvesting is limited to partial cutting consistent with the prevention of snow avalanche initiation.
- 6.5.7 Consistent effort to maintain the **ecological integrity** of aquatic **ecosystems** is evident, including at a minimum:
- a) planning of road locations to minimize stream crossings and construction of roads within **riparian management areas**,
 - b) stream crossing construction measures to minimize disturbance to riparian areas, stream banks and stream channels,
 - c) timing of stream crossing construction to avoid fisheries sensitive seasons (e.g. spawning),
 - d) locating and constructing landings in ways that avoid **riparian management areas** and detrimental impacts on **hydrologic features**,
 - e) locating and constructing roads, landings, backspar trails and skidroads in ways that minimize disruption of natural drainage patterns (e.g., drainage systems are planned and constructed to avoid diversion of surface waters; road widths are minimized to limit the interception of subsurface water),
 - f) employing yarding techniques that do not disturb stream channels, and
 - g) where **channel assessments** indicate decreasing stability, halting road construction and harvesting in relevant portions of watersheds, unless it can be shown that further development will not slow channel recovery or contribute to further channel instability.

- 6.5.8 **Machine-free zones** are established on all streams, lakes, wetlands and marine shorelines. The **machine-free zones** are:
- a) at least 7 m in width;
 - b) not entered by machinery, except where required for construction of crossings or restoration of riparian or stream channel functions, and only if it can be demonstrated that no significant environmental damage will result; and
 - c) areas within which, if harvesting occurs, non-commercial trees and understory vegetation are retained for protection of riparian functions.
- 6.5.9 Active roads and other potential sediment sources are identified and monitored for sediment production on a regular basis. Deactivation, rehabilitation and/or restoration plans are prepared and implemented to control all significant human-induced sediment sources.
- 6.5.10 Consistent effort is evident to minimize increases in peak flow resulting from management activities, including in snowmelt-dominated watersheds, maintaining weighted **equivalent clearcut area (ECA)** to less than 25%, unless recommended otherwise by peer-reviewed **hydrologic assessment**.
- 6.5.11 The **manager** maintains and/or restores riparian functions along rivers, streams, wetlands, lakeshores and marine shores by:
- a) implementing riparian management regimes within the **management unit** that meet or exceed the measures for Stream and Wetland Riparian Reserve and Management Zones and Lakeshore and Marine Shore Reserve and Management Zones as specified in Table 1 in Annex P6a, Requirements for Riparian Management, or
 - b) completing an **integrated riparian assessment** for the management unit, or each **Riparian assessment unit** within the management unit, consistent with the framework in Annex P6a, Requirements for Riparian Management, and implementing a riparian management regime that is consistent with the results of the assessment and meets or exceeds the budgets for Reserve Zones and Management Zones specified in Table 4 in Annex P6a, Requirements for Riparian Management.

Failure to meet Indicator 6.5.11 will result in a major failure of Principle Six.

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.*

- 6.6.1 Where **chemical pesticides** are used on the management unit, plans are in place to phase out their use over a period of no more than 2 years following the date of FSC certification (except for emergency use in nursery seedlings).

Failure to meet Indicator 6.6.1 will result in a major failure of Principle Six.

- 6.6.2 Where **chemical pesticides** are used on the **management unit** during the phase out period, there is evidence of consistent effort to meet plans for their phase out, including the use of **integrated pest management**, with emphasis on prevention strategies.
- 6.6.3 Where tree seedlings or other materials for use on the **management unit** are purchased from outside suppliers, **managers** take actions to source materials that are consistent with eliminating the use of **chemical pesticides**.
- 6.6.4 Where emergency situations require use of seedlings on which **chemical pesticides** have been used, the **manager** has written rationale from the nursery and notifies workers handling those seedlings prior to exposure to the seedlings.
- 6.6.5 **Chemicals** prohibited by Criterion 6.6 are not used (See Glossary for a list of **prohibited chemicals**).

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

- 6.7.1 The **manager** prevents the unintended release of **chemicals**, petroleum products, containers and non-organic wastes, and minimizes health and environmental risks due to their disposal.

6.7.1(i) **Appropriate to the scale and intensity** of operations, documentation identifies and categorizes non-organic wastes generated on and/or **chemicals** and petroleum products stored or used in the management unit.

- 6.7.2 **Appropriate to the scale and intensity** of operations, there are standard operating procedures and/or emergency plans and procedures in place for prevention of and cleanup following spills or other accidents with non-organic wastes, **chemicals** and petroleum products.

- 6.7.3 **Appropriate to the scale and intensity** of operations, waste disposal practices and facilities owned or operated by the **manager** are monitored, and corrective actions taken where deficiencies are identified.

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.*

- 6.8.1 Exotic **biological control agents** are used only as part of a pest management strategy for the control of **exotic species** of plants, pathogens, insects or other animals when other non-chemical pest control methods are, or can reasonably be expected to be, ineffective. Such use is contingent on peer-reviewed scientific evidence that the agents in question are non-invasive and are safe for indigenous species.
- 6.8.2 Where **biological control agents** are used, there is compliance with relevant provincial laws, national laws and internationally accepted scientific protocols, including, in 2002, the provincial Pesticide Control Act and Plant Protection Act, and the federal Pest Control Products Act, Plant Protection Act and Canadian Environmental Protection Act.
- 6.8.3 Use of **biological control agents** is documented and monitored.
- 6.8.4 No **genetically modified organisms** are used.

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

- 6.9.1 Exotic plant or animal species (other than exotic trees addressed under Criterion 10.4) are only introduced after thorough evaluation that determines that they are not invasive and will bring environmental benefits without entailing significant adverse ecological impacts.

6.10 Forest conversion to plantations or non-forest land 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.***

a) *Entails a very limited portion of the Forest Management Unit*

6.10.1 Areas of new conversions to **plantations**:

- a) do not exceed 5% of the **timber harvesting landbase** of the management unit;
- b) are located in previously harvested poorly-managed forest, or if that forest type is not available, in previously harvested well-managed **natural forest**, or if that forest type is not available, in unharvested non old growth forest, and only if none of the previous areas are available, in old growth forest;
- c) do not directly result in the area of old growth forest falling below the estimated mean area of old growth forest determined by the description of the **range of natural variability** completed under Indicator 6.1.7; and
- c) are otherwise consistent with Principle 10.

Failure to meet Indicator 6.10.1 will result in a major failure of Principle Six.

b) *Does not occur on High Conservation Value Forest areas*

Failure to meet Criterion 6.10 b) will result in a major failure of Principle Six.

c) *Will enable clear, substantial, additional, secure, long term conservation benefits across the Forest Management Unit*

6.10.2 **Appropriate to the scale and intensity** of operations, conservation benefits enabled by conversion, and the impacts of the conversion, are evaluated by **qualified specialists**. The evaluation process includes:

- a) evaluation of the conservation benefits enabled by the conversion;
- b) evaluation of the environmental impacts of the conversion itself, taking into account impacts both at the **management unit** level and at the **landscape level**;
- c) the **social impacts** and benefits entailed by the conversion;
- d) review of and input on the conversion area and the offsetting conservation benefits from **qualified specialists**, affected parties and relevant interests (e.g., First Nations, agencies, **local** communities, conservation organizations);
- e) conclusions regarding whether the offsetting benefits meet Criterion 6.10; and
- f) if the conversion evaluation report concludes the proposed conversion meets Criterion 6.10, specific recommendations on how the offsetting benefits for conversions should be secured in a manner that ensures the benefits will be maintained over the **long term** (e.g., legal designations, restrictive covenants).

6.10.3 Management objectives and measures identified in the final evaluation report are incorporated into the **management plan** and other relevant documents, and are implemented.

Failure to meet Indicator 6.10.3 will result in a major failure of Principle Six.

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 profile of adjacent lands.*
- c) Description of silvicultural and/or other management system, based upon 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.*

a) Management objectives.

7.1.1 A long-term **management plan** that confirms the **manager's** commitment to the FSC-BC Regional Standards by describing long-term objectives, management strategies and operational approaches that comply with the Standards, is maintained and updated at least every five years (See Guidance Material on a Planning Approach to Meeting the FSC-BC Regional Certification Standards). The **management plan** includes:

- a) measurable management objectives and management indicator(s) by which their achievement can be assessed;
- b) management objectives that address short- and long-term time frames as applicable, and which are sufficiently specific to provide a basis for developing operational strategies and practices;

- c) depiction of the specific geographic area to which management objectives apply (e.g., management unit, specific reserve, **local** community);
- d) a rationale, including underlying assumptions, for each management objective; and,
- e) incorporates objectives derived from ongoing public participation (See also Indicator 4.4.1) and objectives identified through the First Nations protocol (See also Indicator 3.1.3).

b) Description of the forest resources to be managed, environmental limitations, land use and ownership status, socio-economic conditions, and profile of adjacent lands.

- 7.1.2 The **management plan** describes terrestrial and aquatic species and habitats and timber, non-timber, water, recreation, cultural and visual resources located within the management unit, with reference to applicable inventories (See also Indicators 6.1.1, 6.1.2, 6.1.3 and 5.6.1)
- 7.1.3 The **management plan** describes the **range of natural variability** (See also Indicator 6.1.7).
- 7.1.4 The **management plan** describes environmental limitations and risk identified through inventory and assessments (See also Indicators 6.1.1, 6.1.2, 6.1.3, 6.1.4, 6.1.5, 6.1.6, 6.1.7, 6.1.8).
- 7.1.5 The **management plan** describes High Conservation Value Forest attributes and associated **conservation attributes** identified through assessments (See also Indicator 9.1.1).
- 7.1.6 The **management plan** describes historical land uses, socio-economic conditions, management regimes and conditions on lands within and adjacent to the management unit.
- 7.1.7 The descriptions, inventories and maps required for developing management objectives, strategies and practices are included or referenced in the **management plan**.

c) Description of silvicultural and/or other management system, based upon the ecology of the forest in question and information gathered through resource inventories.

- 7.1.8 Management approaches to be used in operational planning and implementation that will fulfill management objectives are described in the **management plan**.
- 7.1.9 Operational plans are prepared to guide management activities at both the landscape and site level to implement the management objectives, strategies and approaches identified in the **management plan**.

Failure to meet Indicator 7.1.9 will result in a major failure of Principle Seven.

d) Rationale for rate of annual harvest and species selection.

- 7.1.10 A rationale for the rate of annual harvest is included in the **management plan** and is supported by an analysis as set out under Criterion 5.6.

7.1.10 The **management plan** provides direction, for the purpose of operational planning, on the selection of tree species used in reforestation (See also Indicator 6.3.5).

e) Provisions for monitoring of forest growth and dynamics.

7.1.12 The **management plan** contains provisions for monitoring forest growth and dynamics (See also Indicator 8.2.2).

f) Environmental safeguards based on environmental assessments.

7.1.13 The **management plan** includes management strategies to minimize environmental impacts, consistent with the results of environmental assessments (See also Indicators 6.1.1, 6.1.2, 6.1.3, 9.1.1 to 9.1.7), including risk assessments (See also Indicator 6.1.8).

g) Plans for the identification and protection of rare, threatened and endangered species.

7.1.14 The **management plan** contains provisions for rare, threatened and **endangered species** (See also Indicators 6.2.1 to 6.2.5).

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

7.1.15 A map and legal description showing the location and **tenure** status of the **management unit** is included in the **management plan** (See also Indicator 2.1.3)

7.1.16 **Legal or customary tenure or use rights** of others within the **management unit** are identified, described and, where appropriate, mapped and are included in the **management plan**.

7.1.17 Maps of appropriate scale for **management plan** reporting are included in the **management plan**, and larger scale maps appropriate to operational planning are referenced to provide detail where necessary. **Management plans** include or reference accessible maps describing land use and management designations and other maps as necessary to describe the current status and, where appropriate, projected future conditions of forest and forest land characteristics related to management objectives.

7.1.18 Maps necessary for **management plan** reporting on management objectives flowing from Principles 3, 6, 9 and 10 are included in the **management plan**.

i) Description and justification of harvesting techniques and equipment to be used.

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.*

- 7.2.1 Revisions to the **management plan** and supporting operational plans are made when required to respond to:
- a) the results of monitoring (See also Indicators 8.4.1, 8.4.2)
 - b) new technical or scientific information garnered through assessments, land use planning or other sources relevant to the management unit.
 - c) new social and economic information garnered through public participation process and consultation (See also Indicators 4.4.1, 9.2.1 to 9.3.4)

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

Note: The FSC-BC Regional Initiative considers that Criterion 7.3 is sufficiently explicit and measurable that it does not require indicators.

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.*

- 7.4.1 With the exception of sensitive or confidential commercial, cultural or ecological information, the **management plan**, supporting operational plans and assessments are made available to the public in a reasonable manner.

Failure to meet Indicator 7.4.1 will result in a major failure of Principle Seven.

- 7.4.2 Input from interested parties, is solicited during public review of the draft **management plan**. Actions to address this input and accompanying rationales are documented in the **management plan** as appropriate.

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.

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 repeatable over time to allow comparison of results and assessment of change.*

- 8.1.1 **Appropriate to the scale and intensity** of operations a documented monitoring program is in place.
- 8.1.2 Persons responsible for implementing and maintaining monitoring programs are identified.
- 8.1.3 In a manner determined through consultation, First Nations and **directly affected persons** participate in the design, implementation and evaluation of monitoring programs.
- 8.1.4 The monitoring program includes a monitoring plan maintained by the **manager**. The monitoring plan describes:
 - a) elements to be monitored including **HCVF**s as set out under Criterion 9.4;
 - b) monitoring Indicator(s) for each element;
 - c) rationale for the selection of each element and monitoring Indicator(s);
 - d) consistent and replicable monitoring procedures;
 - e) the frequency and intensity of monitoring, consistent with the nature of the monitoring Indicator(s), management activities, environmental sensitivity of the site, assessed risks, stakeholder concerns, performance history, and changing environmental conditions; and,
 - f) relevant baseline information.
- 8.1.5 The monitoring plan is periodically updated and available to those doing the monitoring or working with monitoring data, and a clear link between the monitoring plan and **management plan** is established.
- 8.1.6 Any change in monitoring procedure is documented, including details of any overlapping calibration when old and new procedures are run simultaneously.
- 8.1.7 Monitoring records are compiled in a secure, accessible monitoring **database(s)**.
- 8.1.8 An adequate mechanism is implemented for quality assurance and quality control of the monitoring program.
- 8.1.9 According to a schedule set out in the monitoring plan, the results of monitoring programs are regularly analyzed, summarized, documented and acted upon.

Failure to meet Indicator 8.1.9 will result in a major failure of Principle Eight.

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.**

a) Yield of all forest products harvested

- 8.2.1 Data regarding the yield of timber harvested from the **management unit** (e.g., volume, species and grade) sufficient to assess performance with respect to management objectives, are collected and maintained in the monitoring **database**.
- 8.2.2 Where the **manager** controls the harvest of **non-timber forest products** within the management unit, data regarding their yield, sufficient to assess performance with respect to management objectives, are collected and maintained in the monitoring **database**.

b) Growth rates, regeneration and condition of the forest

- 8.2.3 Data are collected and maintained in the monitoring **database** concerning growth rates, regeneration, forest health, productivity, condition of the forest, and disturbances resulting from forest operations or other causes.

c) Composition and observed changes in the flora and fauna

- 8.2.4 Data are collected and maintained in the monitoring **database** related to composition and observed changes in the flora and fauna as a result of forest operations and other disturbances, including sensitive species and their habitats, See Indicator 6.1.3 g.
- 8.2.5 The condition of habitat identified under Indicator 6.2.1 is monitored, consistent with recovery and/or species management plans as set out under Indicator 6.2.3.

d) Environmental and social impacts of harvesting and other operations

- 8.2.6 Data are collected and maintained in the monitoring **database** related to the condition of selected watersheds (e.g., sensitive or consumptive watersheds) including, as applicable, sediment sources, **Equivalent clearcut area (ECA)**, channel stability and riparian condition.

- 8.2.7 **Appropriate to the scale and intensity** of operations, monitoring addresses **social impacts** resulting from management activities, focusing on elements identified through consultation with First Nations and **directly affected persons**.

e) Costs, productivity, and efficiency of forest management

- 8.2.8 Costs and production associated with harvesting, including stumpage payments, are documented to enable evaluation of **forest management** efficiency.

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 “chain of custody”.

- 8.3.1 A procedure is in place to identify FSC-certified products, including documentation regarding the date, cutting permit/cutblock of origin, quantity, and FSC certificate registration code of products leaving the management unit; for large operations this includes marking logs before transportation such that the cutting permit and cutblock of origin can be identified.

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

- 8.4.1 Findings from monitoring are regularly summarized, analyzed and documented to identify discrepancies between outcomes (e.g., yields, growth, ecological changes) and expectations (e.g., plans, forecasts, anticipated impacts).
- 8.4.2 The results of monitoring are incorporated into periodic revisions of the **management plan**, policies and procedures.
- 8.4.3 Unanticipated impacts identified through monitoring are acted upon.

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.

- 8.5.1 A regular summary is compiled of the results of monitoring. The summary is made available to interested parties.

Principle 9: Maintenance of High Conservation Value Forests

Management activities in High Conservation Value Forests shall maintain or enhance the attributes which define such forests. Decisions regarding High Conservation Value Forests shall always be considered in the context of a precautionary approach.

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.*

- 9.1.1 Appropriate to scale and intensity of operations the **manager** has completed an assessment to determine the presence of **High Conservation Value Forests (HCVF)** and associated **conservation attributes** within or pertaining to the management unit. The assessment is carried out by **qualified specialists**, including consultation with **directly affected persons** and relevant interests (e.g., First Nations, regulatory agencies, **local** communities, conservation organizations).
- 9.1.2 The **HCVF** assessment:
- is based on the best available information including scientific, traditional and local knowledge;
 - is conducted using a hierarchical approach that includes consideration and identification of **HCVFs** and **HCVF** attributes at global, regional, landscape and site levels;
 - considers appropriate temporal scales, **compatible with the range of natural variability**;
 - identifies **conservation attributes** associated with each **HCVF** present, the significance of each conservation attribute, and measurable thresholds for their maintenance;
 - includes documentation of underlying assumptions, uncertainties in data and knowledge and how they have been dealt with, and the rationale behind management recommendations; and,
 - includes independent, third party input from and review by **qualified specialists**.
- 9.1.3 The assessment considers the condition of adjacent lands and the **ecosystem(s)** within which the **management unit** is located consistent with the requirements of Indicators 6.1.1-6.1.7 as well as **tenure** distribution, community adjacency and social, economic and cultural factors pertaining to forest habitats and uses of the forest relevant to the **HCVF** being assessed.
- 9.1.4 When identified during the assessment, **HCVF(s)** and, where they can be represented spatially, associated **conservation attributes** are delineated on maps appropriate to the scale related to the designation (e.g., global, national, regional) and in a manner that clearly demonstrates the location of the **HCVF(s)** in relation to the management unit. The maps are included in the **HCVF** assessment report, **management plans** and relevant operational plans. Where there is a need to maintain confidentiality regarding the location of a sensitive site, the exact location of the **HCVF** or conservation attribute is not mapped or the information is otherwise held in confidence.

- 9.1.5 The assessment recommends management strategies and practices that will maintain or restore identified **HCVF conservation attributes** consistent with the **precautionary approach** including:
- specific management measures to maintain or restore the **conservation attributes** (e.g., reserves, silvicultural practices, access management);
 - development and application of a risk assessment methodology appropriate to the conservation attribute to be maintained or restored [and consistent with that described in Indicators 6.1.4, 6.1.5, and 6.1.6 (See Guidance Material on Risk Assessment)];
 - development and application of a monitoring program; and,
 - development and application of an adaptive management strategy appropriate to the conservation attribute and its level of sensitivity.
- 9.1.6 The assessment report is updated every five years or more frequently depending on the sensitivity of the **conservation attributes**. The update includes new information garnered through consultation, monitoring (See also Indicators 8.1.1-8.1.6 and 9.4.1-9.4.3) and adaptive management.

9.2 *The consultative portion of the certification process must place emphasis on the identified conservation attributes, and options for the maintenance thereof.*

- 9.2.1 The assessment report has been made available for review by **qualified specialists, directly affected persons** and relevant interests (e.g., First Nations, regulatory agencies, **local communities**, conservation organizations).
- 9.2.2 The **manager's** proposed strategies and measures for the maintenance of **HCVFs** and **conservation attributes**, with accompanying rationale, are made available for review by **qualified specialists, directly affected persons** and relevant interests.
- 9.2.3 The advice and comments received through the reviews referred to in Indicators 9.2.1 and 9.2.2, and the response to them, are documented and maintained by the **manager**, and are made publicly available.
- 9.2.4 Where the results of the assessment are contested by **qualified specialists, directly affected persons** and/or relevant interests, the onus is on the **manager** to prove that **HCVFs** and their associated **conservation attributes** have been adequately identified and assessed.

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.*

- 9.3.1 The **conservation attributes** necessary to maintain and/or enhance **HCVFs** found within the **management unit** are identified.

- 9.3.2 The **manager** documents in the **management plan** and supporting operational plans the measures necessary to maintain or restore each identified **HCVF** or conservation attribute.
- 9.3.3 The management strategies and measures selected to maintain or restore conservation attribute(s) are consistent with a **precautionary approach**, and with respect to each **HCVF** or conservation attribute, the **manager** shows that the measures:
- a) will create conditions with a very high probability of securing the long-term maintenance or the restoration the **HCVF** or conservation attribute;
 - b) are being implemented; and,
 - c) are proving effective or are adapted as required based on the results of monitoring (See also Indicators 9.4.1-9.4.3).

Failure to meet Indicator 9.3.3 will result in a major failure of Principle Nine.

- 9.3.4 Where proposed management strategies and measures to maintain or restore **conservation attributes** are contested by affected persons or **qualified specialists** the onus is on the **manager** to provide clear, independent evidence that the proposed actions will maintain the **conservation attributes**.

Failure to meet Indicator 9.3.4 will result in a major failure of Principle Nine.

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

- 9.4.1 The **manager** sets up and implements a program to monitor the status of **HCVFs** and **conservation attributes** including the effectiveness of the measures employed for their maintenance or restoration. The monitoring program is designed and implemented consistent with the requirements of Principle 8.
- 9.4.2 The monitoring program is capable of alerting the **manager** to changes in the status of an **HCVF** or conservation attribute, and determining if the conservation measures are effective in maintaining or restoring the **HCVF** or attribute. The results of monitoring are assessed consistent with the monitoring requirements of Indicator 8.1.1.
- 9.4.3 When monitoring results indicate increasing risk to a specific conservation attribute, the **manager** re-evaluates the measures taken to maintain or enhance that attribute, and adjusts the management measures to reverse the trend.

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.

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.*

- 10.1.1 Where plantation management regimes are employed in a management unit, **natural forest** conservation or restoration objectives associated with those **plantations** are achieved in a timeframe consistent with the objective.
- 10.1.2 Where **plantation** management regimes are employed in a management unit, social and economic objectives associated with those **plantations** are achieved in a timeframe consistent with the objective.
- 10.1.3 Where there are portions of the **management unit** that have stand characteristics and past or present management practices that are consistent with **plantation** management regimes (i.e. former or present **plantations**) that require restoration to meet the requirements of Criteria 10.2 or 10.5, these areas are designated as **restoration areas** and their mapped locations and restoration objectives are included in the **management plan** or supporting documents (See also 6.3.1)

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.*

- 10.2.1 The location, management and extent of **plantation** areas are consistent with **landscape level** biodiversity objectives, strategies and measures, including seral stage distribution, old-growth representation, patch size distribution, forest interior habitat, **landscape connectivity**, tree species diversity and the conservation of rare and **critical habitats** (See Indicators 6.3.13 to 6.3.17).

Failure to meet Indicator 10.2.1 will result in a major failure of Principle Ten.

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.*

- 10.3.1 Selection of species and genotypes for areas under **plantation** management regimes is compatible with local environmental conditions, forest health considerations and biodiversity objectives.
- 10.3.2 Design and layout, selection of species and genotypes, and planning of harvesting cycles for areas under **plantation** management regimes enhance the management unit's overall contribution to the **local** economy (e.g., **local** processing, the non-timber economic benefits generated by forests, timber supply, **local** economic diversification).
- 10.3.3 Stand level management in areas under **plantation** management regimes incorporates biodiversity considerations wherever this can be done while meeting the economic and social objectives.

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 used 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.*

- 10.4.1 Preference is given to planting **native species** from local provenances.
- 10.4.2 Exotic tree species are only utilized where it has been demonstrated that they pose no significant risks to the environment (e.g., become invasive, introduce pests or diseases), on or off the **management unit** (See also Indicator 10.8.1).

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.*

- 10.5.1 The extent of area under **plantation** management regimes does not exceed 10% of **timber harvesting landbase**.

Failure to meet Indicator 10.5.1 will result in a major failure of Principle Ten.

- 10.5.2 The extent of area under **plantation** management regimes does not exceed 30% of the **timber harvesting landbase** of any single BEC **variant** within the management unit, unless environmental impacts are decreased by further concentrating the location of areas under **plantation** management regimes.

10.5.3 Where the extent of area within the **management unit** that has stand characteristics and past or present management practices that are consistent with **plantation** management regimes (i.e. former or present **plantations**) exceeds the maximum requirement under Indicator 10.5.1:

- a) sufficient areas have been identified for restoration to **natural forests** to meet the requirement within a timeframe less than the average rotation age of the **plantations**,
- b) the **restoration areas** are identified on maps, and
- c) they are actively being restored (See also Indicator 6.3.1).

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.

10.6.1 Management practices in **plantation** areas are consistent with soil and water conservation measures specified under Criteria 6.3 and 6.5.

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.

10.7.1 Management regimes in **plantation** areas are designed to minimize forest damage from fire, pests, diseases, wind and other factors.

10.7.2 Where **plantations** are shown to significantly increase the level of pest infestations or disease within the **plantations** or in adjacent stands, **plantation** management is adjusted to avoid such problems or those **plantations** are phased out in a timely manner.

10.7.3 Chemical use in **plantation** areas is consistent with Criteria 6.3, 6.6 and 6.7.

10.8 *Appropriate to the scale and diversity of the operation, monitoring of plantations shall include regular assessment 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.*

- 10.8.1 Use of exotic tree species, on an operational basis, only occurs following intensive, long-term research trials. Exploratory exotic tree species research trials are:
- a) limited to a maximum of 10 ha in aggregate;
 - b) scientifically rigorous;
 - c) of sufficient duration to determine potential long-term impacts (e.g., a full harvest rotation); and,
 - d) designed and assessed by **qualified specialists**, including a forester, conservation biologist and agrologist.
- 10.8.2 The **manager** provides public notice at least 120 days before a decision is taken to proceed with the use of exotic tree species on an operational basis, and comments from the public are solicited.

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.*

- 10.9.1 Areas under **plantation** management regimes established before November 1994, or that were established since November 1994 and the **manager** or owner is not responsible directly or indirectly for the conversion, and do not meet Criteria 10.2 or 10.5 (e.g., exceed the requirements of 10.5.1), are designated **restoration areas** (See also Indicator 6.3.1).
- 10.9.2 Where areas under **plantation** management regimes have been established after November 1994, other than where the **manager** or owner is not responsible directly or indirectly for the conversion, they are established in accordance with Criterion 6.10.

Annex P6a: Requirements for Riparian Management

The following are FSC-BC Requirements for riparian management under Indicator 6.5.11.

Introduction

Managers routinely inventory and classify **hydrologic features** as required by the Forest Practices Code (FPC). Under FSC-BC Criterion 6.1, inventory and classification includes determination of watershed and sub-basin boundaries, **H60 lines**, location of springs, location and width of stream reaches, location and extent of lakes and wetlands, and the location of domestic and irrigation water intakes. Stream classification for deployment of riparian management strategies also requires the determination of the presence of fish and aquatic habitat, the distance upstream from fish-bearing waters, and the presence of licensing for domestic water use.

The following sections describe two approaches for meeting the riparian conservation requirements of Criterion 6.5. The preferred and most flexible approach involves assessments by **qualified specialists** to determine riparian management requirements for each **riparian assessment unit** (e.g., a watershed, See also Glossary and Assessment Framework below). This approach also includes a minimum budget of reserves and management zones to provide consistency of application, to provide certifiers with a definitive threshold, and to guard against misuse of the flexibility offered. Recognizing that some **managers** do not have the expertise or resources to complete detailed assessments, an alternative prescriptive approach is also provided. The prescriptive approach is simple to implement, and yet provides a reasonable likelihood of maintaining most riparian functions (See the following section, Prescriptive Riparian Management Approach).

Prescriptive Riparian Management Approach

In the absence of detailed riparian assessments, **managers** are required to meet or exceed the default riparian protection measures for streams, wetlands, lakeshores and marine shores described in Table 1. The minimum reserve and management zones required for riparian areas are based on a review of the scientific literature and consultation with various **qualified specialists**. The reserves and management zone minimums are intended to maintain riparian functions related to hydrologic and marine shoreline **ecosystems** in most situations, and to provide a significant contribution to terrestrial habitat riparian functions in many situations. Full maintenance of riparian **ecosystem integrity** may require measures in excess of the minimums in some situations.

The stream, wetland, lakeshore and marine shore classifications employed in Table 1 are adapted from the BC Forest Practices Code Guidebooks for Riparian and Lakeshore Management (BC MoF 1995a and 1995b) and the Clayoquot Sound Scientific Panel 1995. The definitions of S1a, S1b, S2, S3 and S4 classes are the same as the FPC; however, the degree of riparian retention is increased. FPC S5 and S6 classes have been subdivided to better account for streams potentially affecting fish-bearing reaches and those present in domestic watersheds, as follows:

- S5a streams include large non-fish-bearing streams, moderate-to-large streams likely to influence fish-bearing streams, and moderate-to-large streams in non-community, domestic watersheds.

- S5b streams include moderate sized non-fish-bearing, non-community watershed streams that are: a) unlikely to influence fish-bearing streams, and b) not located in domestic watersheds.
- S6a streams include small non-fish-bearing, non-community watershed streams that are: a) likely to influence fish-bearing streams, or b) located in domestic watersheds.
- S6b streams include very small non-fish-bearing, non-community watershed streams, and small non-fish-bearing streams that are a) not likely to influence fish-bearing streams, or b) not located in domestic watersheds.

Table 1. Default minimum riparian requirements in the absence of integrated riparian assessments.

Stream Class. ¹	Definition (fish presence, watershed status, stream width, stream class ¹)	RRZ ² min. width (m)	RMZ ² min. width (m)	RMZ ² min. retention (%)
S1a	Fish present or community watershed, >100 m wide	15	120	75
S1b	Fish present or community watershed, 20-100 m wide	50	40	75
S2	Fish present or community watershed, 5-20 m wide	40	20	75
S3	Fish present or community watershed, 1.5-5 m wide	40	30	75
S4	Fish present or community watershed, <1.5 m wide	30	25	75
S5a	Fish absent, not in community watershed, >3 m wide, <u>and</u> : a) in a domestic watershed, and/ <u>or</u> b) <1000 m upstream of fish-bearing stream, and/ <u>or</u> c) >10 m wide	40	30	75
S5b	Fish absent, not in community watershed, 3-10 m wide, non domestic watershed, <u>and</u> >1000 m upstream of fish-bearing stream	15	30	75
S6a	Fish absent, not in community watershed, 0.5-3 m wide, <u>and</u> : a) in a domestic watershed, and/ <u>or</u> b) <500 m upstream of fish-bearing stream	30	25	75
S6b	Fish absent, not in community watershed, <u>and</u> : a) 0.5-3 m and not in a domestic watershed and >500 m up-stream of fish-bearing stream, <u>or</u> b) < 0.5 m wide	15	20	75
Wetland Class. ¹	Definition (wetland type, wetland class ¹)	RRZ ² min. width (m)	RMZ ² min. width (m)	RMZ ² min. retention (%)
W1-5	Wetlands >1 ha, wetlands 0.25-1 ha in selected BEC variants , wetland complexes and other wetlands with fish	20	30	75
Other Wetlands	Unclassified wetlands without fish	10	20	75

¹ S1 – S4, W1 – W5, L1 – L4: classification according to BC Forest Practices Code Riparian Management Area Guidebook 1995; S5a, S5b, S6a and S6b as defined above; marine shore classes adapted from Clayoquot Sound Scientific Panel 1995.

² RRZ – riparian reserve zone; RMZ – riparian management zone; LRZ – Lakeshore Reserve Zone; LMZ – lakeshore management zone; MRZ: marine shore reserve zone, MMZ: marine shore management zone. Marine shores are defined as the seaward edge of forest vegetation, and MRZs and MMZs are measured inland from that point.

(table continued on next page)

Table 1 (cont'd). Default minimum riparian requirements in the absence of integrated riparian assessments.

Lakeshore Class ¹	Definition (lake size and type, lakeshore class ¹)	LRZ ² min. width (m)	LMZ ² min. width (m)	LMZ ² min. retention (%)
L1-4	Lakes >1 ha, lakes 0.25-1 ha in selected BEC variants and other lakes with fish	20	20	75
Other Lakeshores	Unclassified lakes without fish	10	20	75

Marine Shore Class ¹	Definition (marine shore type)	MRZ ² min. width (m)	MMZ ² min. width (m)	MMZ ² min. retention (%)
Open water beaches and low shores	Shores with beaches (e.g., shores of unconsolidated cobbles or sand) or low shores without beaches (bluffs < 5m) adjacent to open waters	130	30	75
Open water bluffs and cliffs	Shores without beaches and with bluffs >5m or steep bedrock cliffs adjacent to open waters	75	25	75
Protected waters	Protected water lagoons or estuaries	80	30	75

¹ S1 – S4, W1 – W5, L1 – L4: classification according to BC Forest Practices Code Riparian Management Area Guidebook 1995; S5a, S5b, S6a and S6b as defined above; marine shore classes adapted from Clayoquot Sound Scientific Panel 1995.

² RRZ – riparian reserve zone; RMZ – riparian management zone; LRZ – Lakeshore Reserve Zone; LMZ – lakeshore management zone; MRZ: marine shore reserve zone, MMZ: marine shore management zone. Marine shores are defined as the seaward edge of forest vegetation, and MRZs and MMZs are measured inland from that point.

Assessment Framework

Where a **manager** prefers to complete more detailed assessments, and develop more site specific riparian management strategies, this section provides a framework for the required assessments and strategies. Table 2 summarizes inventory and data needs. Table 3 summarizes the assessments required to determine riparian management strategies for maintaining the range of riparian functions in any given situation. Table 4 provides a summary of threshold riparian area budgets for meeting FSC-BC riparian management requirements under Criterion 6.5. Where assessments determine that maintenance of riparian functions requires retention in excess of the threshold budgets, the direction of the assessments should be followed. Where the assessments indicate that riparian functions can be adequately maintained with less retention than the threshold budgets, the remaining budgets can be used to fulfill other terrestrial habitat requirements associated with riparian areas (e.g., Criteria 6.2, 6.3, 6.4 and 9.3). Use of the riparian assessment approach involves five steps as described below and as illustrated in Figure 1.

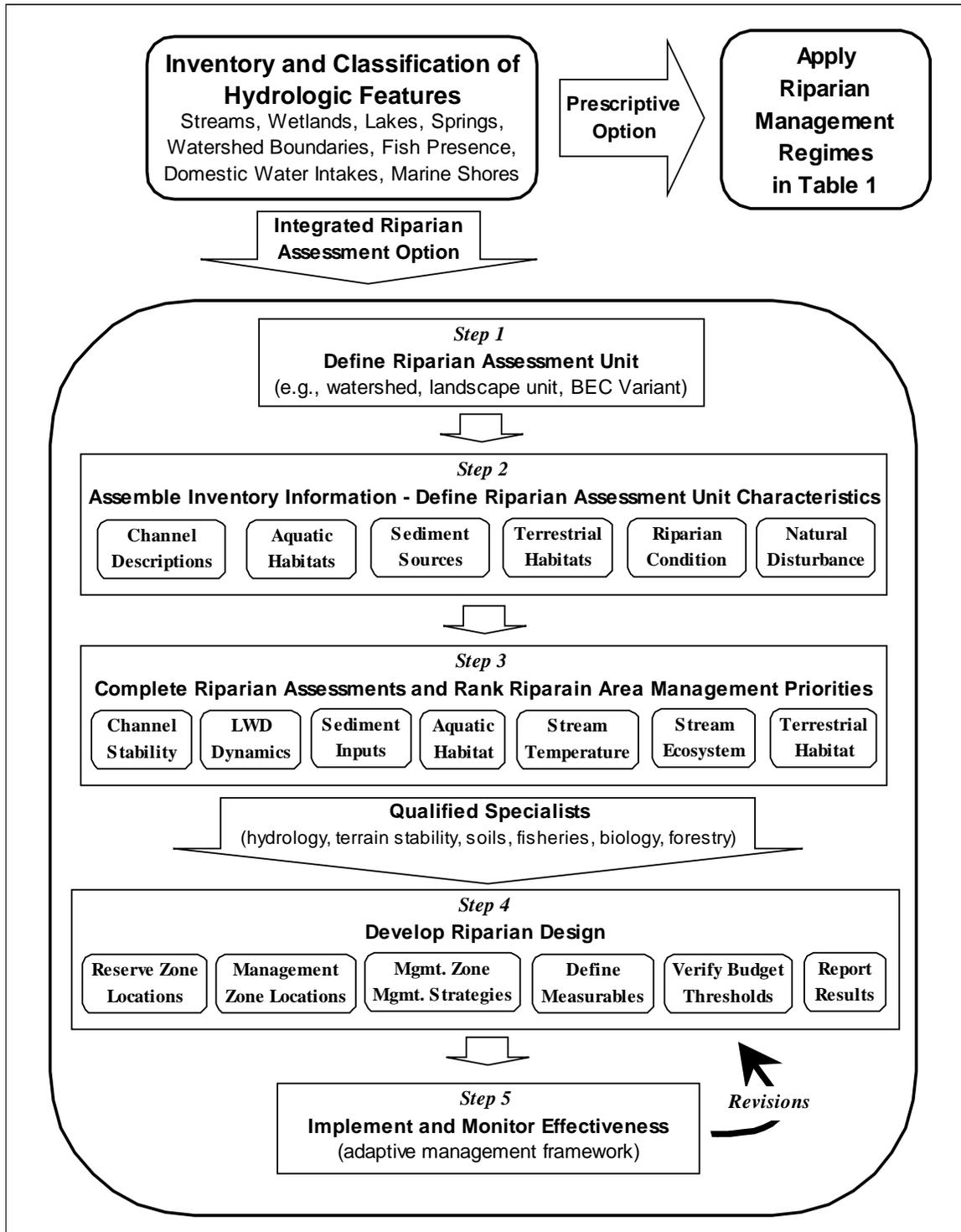


Figure 1. Schematic representation of the two riparian management options and the five steps involved in the integrated riparian assessment option (aquatic habitat includes near-shore marine and littoral zones where applicable).

Step 1. Select an appropriate *Riparian Assessment Unit*.

Before commencing the assessment itself, an appropriate unit for the assessment and application of the results must be selected. For stream channel riparian assessments the logical unit is usually a watershed or potentially a group of watersheds (e.g., on face units). For wetlands, lakeshore and/or marine shore riparian planning, or stream riparian planning on extensive plateaus or coastal plains, the unit may be a **landscape unit**, a BEC **variant** within an **ecosection** or possibly an **ecosection**. The appropriate size of assessment unit will vary depending on stream density, wetland and lake density, complexity of the marine shoreline, topography and other factors. In general, units should fall between 5,000 and 50,000 ha. Where appropriate units involve multiple management units, **managers** and/or management agencies, as many as possible of the relevant parties should be involved in the assessment process. Where a **management unit** forms only a portion of the appropriate assessment unit, and an integrated assessment is not feasible, the **manager** can proceed with an assessment limited to the **management unit** (steps 1 through 3 below), but the assessment process must still define an appropriate assessment unit, and take into account the context of the whole assessment unit and the management regimes present in other parts of the assessment unit when developing a riparian management strategy for the **management unit** (step 4 below).

Step 2. Obtain relevant *Riparian Assessment Unit* characteristics from inventory information.

This step focuses on using basic inventory information to identify important **ecosystem** and watershed processes, known sensitivities and specific critical or vulnerable sites (See Table 2). This step begins with identification and mapping of the spatial extent of the hydriparian **ecosystem**, followed by assembly of more detailed information regarding various components of that ecosystem. The recommended inventory and data sources, and interpretive requirements are built around the existing planning framework in British Columbia. Where information gaps exist, they may be filled through collection of additional inventory information, or through use of modelling and/or assumptions. All assumptions and their rationale should be clearly specified in the final riparian design report (prepared in step 4).

It is assumed here that many of the basic inventories are already available for many watersheds and other **Riparian Assessment Units**, especially Community Watersheds and High Value Fisheries Watersheds (See Table 2). Implementation of the Forest Practices Code and the Watershed Restoration Program has resulted in the completion of numerous relevant inventories including: **terrain and soil characteristics** and hazard interpretations, channel stability assessment and interpretation (including peak flow assessment), fish presence and aquatic habitat assessment, riparian condition, terrestrial **ecosystem** mapping, predictive **ecosystem** mapping and habitat capability mapping. The far right column of Table 2 indicates the type of information that must be extracted from these inventories to provide a basis for assessment of riparian management requirements.

Step 3. Complete riparian assessments and rank the potential integrated management responses.

The riparian assessments shown in Table 3 are carried out by **qualified specialists** appropriate to the values and risks identified for the features under consideration. These assessments would normally include a multidisciplinary group of persons with expertise in hydrology, terrain/soils/geomorphology, fisheries habitat, wildlife biology, **landscape** ecology and forestry.

These individuals may include many of the same people who conducted the inventories. In some situations the assessments may require focused expertise such as a specialist in amphibian biology, stand structure, windthrow management and/or salmon spawning habitat.

The goal of these assessments is to identify stream reaches and/or stream segments (i.e., sub-reaches) with aquatic habitat values, stream reaches that influence those values and stream reaches/segments that are vulnerable to riparian disturbance. Each assessment includes a ranking of vulnerable locations where greater riparian retention may be recommended and a description of the nature of the vulnerability and the potential constraint it poses on the management of riparian vegetation. All assumptions must be clearly identified. It is preferable that these assessments be carried out with interaction and exchange between the assessors as implied by Figure 1.

The array of potential riparian values, functions and vulnerabilities is reviewed on an analysis-unit basis (as indicated in Step 1), to develop a ranking of stream reaches for which riparian conservation measures are required. Riparian retention for terrestrial habitat forms an integral part of this step.

Step 4. Develop riparian design, define management regimes, establish appropriate measurables, and summarize results and assumptions.

Based on the compilation and integration of the various riparian values, functions and vulnerabilities, a riparian management design is developed that provides the temporal and spatial layout of forest reserve zones and management zones for riparian areas. The design must clearly indicate how and where the following components and functions have been addressed: channel stability (including bank stability and large woody debris), sediment control, aquatic habitat (including temperature and nutrient needs), floodplain functions (e.g., water storage, sediment accumulation), groundwater functions, terrestrial habitat functions of riparian areas and **landscape connectivity**. The riparian management regime should include long-term projections of riparian condition, and incorporate sufficient flexibility to accommodate stochastic disturbances and future revisions necessitated by monitoring results. The design is mapped and summarized in a written report that includes supporting rationale and data demonstrating that it meets or exceeds the minimum budgets set out in Table 4 over the **long term**. Measurable targets are established at this stage to enable monitoring and feedback (See Step 5 for details).

Where a regional windthrow hazard assessment has suggested potential problems with the stability of specific riparian reserves or management zones, local windthrow hazard assessments are carried out and integrated with terrain stability information. The riparian design must be made consistent with the recommendations of these site-specific assessments, while also meeting objectives for the maintenance and/or restoration of riparian functions.

Step 5. Implement, monitor effectiveness and revise design as required.

This step involves three components.

a) Set objectives.

The monitoring and revision step begins with establishing monitoring objectives that address the following questions:

- What are the key cause-and-effect linkages between management and riparian function?
- What relevant trends are expected to be present?
- What physical conditions (aquatic/terrestrial) are desirable to maintain riparian integrity?

Prioritize the objectives. Make them focused and efficient. Include explicit consideration of natural variability.

b) Select appropriate variables and collect data.

For the objectives established in (a), selection of monitoring parameters is carried out with attention to the following:

- identify, evaluate, and prioritize options available to meet the objectives
- identify critical uncertainties in associated knowledge
- monitor over temporal and spatial scales appropriate to the objectives
- choose *measurable* variables
- tailor the monitoring plan to watershed-specific conditions and concerns
- make use of available data to extend the monitoring period

Examples of potential measurable variables include large woody debris pieces (minimum size) per 100 m, riparian stand characteristics (tree size, density, and species), change in stream temperature (over specific segments), percentage of stream with full shade, percentage of bank with active erosion, distribution of canopy closure over stream segments, percentage of pools, etc. Although monitoring of overall resource condition/change (e.g., fish populations) can be useful, this would not be considered part of a riparian monitoring design.

For each objective, a hypothesis should be established which expresses why the measurable variables are selected (rationale) and how they are expected to change in relation to resource trend.

Sampling design should include sampling locations, intensity, methods and schedule, and include identification of how quality assurance will be achieved. These details should be included in a summary report along with expected data analysis needs.

c) Analyze data and revise design.

As monitoring results become available, the objectives are evaluated in light of the following:

- compare outcome with established targets
- assess the effectiveness of the prescriptions in achieving the targets
- are resources responding as expected?
- assess the effectiveness of the targets in maintaining riparian functions – in terms of both the target values and the target parameters
- justification of the chosen monitoring parameters and the associated established targets
- effectiveness monitoring to assess level of success in reaching targets established in Step 4

The riparian design is then revised based on an analysis of the monitoring results.

Table 2. Inventory information and required interpretations for riparian assessments.

#	Inventory Information	Associated Riparian Functions ¹	Sources of Information	Inventory Data Interpretations Required for Riparian Assessments
1	Channel Descriptions	LWD recruitment Bank integrity	Channel assessments (from IWAP/CWAP and/or Watershed Restoration Program); for small stream assessment methods see Carver and Putt 1999.	<ul style="list-style-type: none"> ▪ Dominant processes maintaining channel stability/morphology and water quality. ▪ Specific locations where LWD is important/depleted in relation to channel stability/morphology. ▪ Location of channel migration zones and their activity level. ▪ Condition of banks and locations where trees are important to maintaining bank integrity.
2	Sediment Sources (existing and potential)	Sediment moderation	IWAP/CWAP Sediment Source Surveys; Level A & D Terrain stability mapping /Assessments; Level B & C Terrain/Soils Mapping and interpretations for TS, LISS, SE, RDE, SD	<ul style="list-style-type: none"> ▪ Dominant processes creating stream sediment sources, and natural range of variability. ▪ Existing sediment sources (natural and development-related). ▪ Location of unstable terrain with potential for sediment delivery to streams. ▪ Location of sites with potential for sediment delivery due to surface erosion processes, especially those associated with road and ditchline erosion.
3	Aquatic Habitat (existing & potential with restoration)	LWD recruitment Stream temperature moderation Litterfall and nutrient dynamics	Stream classification surveys; MELP Regional Fisheries Information; DFO Fisheries Atlas; Fish Habitat Assessments; Fish Wizard website	<ul style="list-style-type: none"> ▪ Dominant habitat-forming processes (including importance of LWD to aquatic habitat). ▪ Aquatic species diversity (fish, amphibians, benthic assemblages). ▪ Location of critical habitat sites and their vulnerability. ▪ Description of sediment sensitivity, temperature sensitivity and nutrient needs of aquatic species.
4	Terrestrial Habitats	Provision of Terrestrial Habitats	Wildlife and biodiversity surveys; Terrestrial Ecosystem Mapping; Predictive Ecosystem Mapping; Wildlife Capability maps; nutrient transfer research studies; airphotos with field verification	<ul style="list-style-type: none"> ▪ Terrestrial species using or potentially using riparian areas (birds, mammals, herptiles). ▪ Riparian habitat types and features required to support terrestrial species present. ▪ Plant communities dependent on proximity to water (i.e. extent of hydriparian ecosystem). ▪ Locations of riparian sites significant to terrestrial species. ▪ Role of riparian areas in landscape connectivity, patch sizes, seral stage distribution and transfer of marine/lake-derived nutrients from stream to forest (e.g. salmon carcasses).
5	Natural Disturbance Patterns of Riparian Areas	All	Windthrow hazard mapping; studies on the range of natural variability (fire regimes; insect/disease risks etc.)	<ul style="list-style-type: none"> ▪ Role and effect of natural disturbance (fire, windthrow, etc.) in modifying the riparian areas. ▪ Expected past and projected riparian condition based on only natural disturbance patterns. ▪ Regional windthrow hazards in relation to riparian areas.
6	Riparian Condition (existing and projected)	All	IWAPs/CWAPs; Forest Cover mapping; FDPs; TRIM maps; Access Management Plans ; Spatial Modeling for Timber/Habitat Supply	<ul style="list-style-type: none"> ▪ Existing riparian condition including identification of the cumulative effects of development. ▪ Restoration requirements to reestablish riparian function and aquatic ecosystem integrity. ▪ Projected riparian condition over next 250 years, incorporating planned development and the results of sensitivity analyses (including consideration of stochastic events, the range of natural variability and projected harvesting, roads and other development).

¹ Refer to Carver (2001) for explanation of riparian functions.

Table 3. Integrated riparian assessments to support selection of detailed riparian design.

#	Assessment Type	Associated Riparian Functions ¹	Elements of the Assessments	Minimum Factors to be Considered
1	Channel Morphology, Condition, and Stability	LWD recruitment Bank integrity Moderation of sediment yield	<p>Describe and classify all stream reaches.</p> <ul style="list-style-type: none"> ▪ Develop generalized classes (and corresponding spatial layout) of stream behaviour and identify dominant processes of each type². <p>Establish relative importance and management needs of channel migration zones.</p> <p>Rank stream reaches or reach segments according to their sensitivity to changes in LWD recruitment, sediment inputs, and flow regime.</p> <p>Establish riparian management requirements for each class of stream behaviour².</p>	<p>Stream channel characteristics: width, gradient, entrenchment, LWD requirement, presence/absence of fish and consumptive-use status</p> <p>Channel disturbance history (natural and development related)</p> <p>Channel sensitivity to riparian disturbance</p> <p>Aquatic habitat values</p> <p>Potential for flooding and/or channel-migration impacts on downstream human habitation and other infrastructure</p> <p>Natural disturbance regimes</p>
2	LWD Dynamics	LWD recruitment Bank integrity Moderation of sediment yield	<ul style="list-style-type: none"> ▪ Identify LWD recruitment rates (including size ranges) required to support channel morphology/stability and relevant aquatic habitats. ▪ Model LWD recruitment through time (including upslope sources). ▪ Rate priorities of stream reaches (or reach segments) for LWD recruitment requirements. 	<p>LWD recruitment factors (bank-erosion, windthrow, growth rates, species and size requirements etc.)</p> <p>Potential for reserve zones and/or management zones to meet identified LWD recruitment needs (e.g., RRZ widths, RMZ silvicultural systems).</p>
3	Sediment Inputs	Moderation of sediment yield	<ul style="list-style-type: none"> ▪ Identify stream reaches or reach segments with significant existing and potential for sediment sources or where sediment delivery to the stream channel could be reduced with increased riparian stand retention. ▪ Determine the location of riparian sites vulnerable to being deforested due to mass movements. ▪ Rate priorities of stream reaches (or reach segments) for riparian reserves for moderation of sediment inputs (include consideration of upslope management regimes). 	<p>Location and input rates of existing sediment sources.</p> <p>Location and extent of Class IV and V terrain-stability map polygons with a high hazard for Landslide Induced Stream Sedimentation.</p> <p>Location and extent of map polygons with a high hazard for Surface Soil Erosion and/or Road and Ditchline Erosion and a high hazard for Sediment Delivery.</p> <p>Development plans for roads and forest harvesting.</p>

¹ Refer to Carver (2001) for explanation of riparian functions.

² An example application of this objective is found in the Channel Guild Concept (e.g., Plum Creek Timber Company) – other examples with suitable rationale may also be appropriate.

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Table 3 (cont'd). Integrated riparian assessments to support selection of detailed riparian design.

#	Assessment Type	Associated Riparian Functions ¹	Elements of Assessment	Minimum Factors to be Considered
4	Aquatic habitats	LWD recruitment Moderation of sediment yield	<ul style="list-style-type: none"> ▪ Identify and describe all stream reaches (or reach segments) with significant aquatic habitats (fish, herptiles, benthics etc.). ▪ Identify non-fish-bearing reaches (or reach segments) with potential influence on downstream fish-bearing reaches (temperature, LWD, sediment delivery, organic material, etc.). ▪ Identify stream reaches or reach segments with aquatic habitat requirements for LWD that are above basic channel stability requirements. ▪ Rate priorities of stream reaches (or reach segments) for riparian reserve and management zones to maintain the integrity of aquatic habitats. 	<p>Fish species present including their diversity, abundance, and species sensitivities.</p> <p>Aquatic habitats for fish spawning, rearing, and migration.</p> <p>Aquatic habitats for other species.</p> <p>Habitat sensitivities to changes resulting from riparian-stand modifications (LWD, stream temperature, shading, nutrient inputs, etc.).</p>
5	Stream Temperature	Moderation of stream temperature	<ul style="list-style-type: none"> ▪ Identify temperature-sensitive species and values (including benthic assemblages); define appropriate target temperature ranges, and canopy requirements to achieve the temperature targets. ▪ Identify temperature-sensitive stream reaches (aquatic habitat areas and upstream reaches with potential influence on habitat areas). ▪ Rate priorities of stream reaches for riparian reserve and management zones to maintain stream temperatures within target ranges. 	<p>Types and locations of temperature sensitive species and values.</p> <p>Type, density, size of riparian vegetation necessary to maintain stream temperatures.</p> <p>Natural riparian disturbance patterns.</p>
6	Stream Ecosystem	Litterfall and nutrient dynamics	<ul style="list-style-type: none"> ▪ Identify nutrient sources and pathways in relation to aquatic values/species, and define the role of riparian vegetation in those pathways. ▪ Identify targets defined both spatially and temporally. ▪ Rate priorities of stream reaches for riparian reserve/management zones to maintain stream temperatures within the target ranges. 	Types, rates and significance of litterfall to benthic communities, and other aquatic species.
7	Terrestrial Habitats	Provision of Terrestrial Habitats	<ul style="list-style-type: none"> ▪ Identify riparian habitat needs of relevant terrestrial species and hydriparian plant communities (including hydrophytic plant communities, rare ecosystems and stand structural features such as CWD). ▪ Identify riparian area role in horizontal transfer of marine/lake derived nutrients from stream to forest. ▪ Identify riparian requirements for landscape connectivity. ▪ Rate priorities of stream reaches for riparian reserve and management zones to meet the habitat needs of terrestrial species and maintain rare ecosystems. 	<p>Riparian terrestrial habitat requirements particularly for microclimate, specialized vegetation (e.g., plant communities dependent on proximity to water) and stand structure (including invertebrates, reptiles, amphibians, birds, small mammals and large mammals); riparian role in providing habitat for species that transfer nutrients between terrestrial and aquatic ecosystem components (e.g., grizzly bears and salmon).</p>

¹ Refer to Carver (2001) for explanation of riparian functions.

² An example application of this objective is found in the Channel Guild Concept (e.g., Plum Creek Timber Company) – other examples with suitable rationale may also be appropriate.

Table 4. Minimum budgets to be deployed during implementation of integrated riparian assessments. Budgets are to be applied at the *Riparian Assessment Unit* level.

Stream Class ¹	Definition (fish presence, watershed status, stream width, stream class ¹)	RRZ/RMZ ² widths and retention levels	Riparian budget minimums to be applied at the riparian assessment unit level (generally a watershed) ³
RC 1	Streams with fish present and >5 m wide (most S1a, S1b and S2's)	Variable	Minimum budgets for application to streams in this class: RRZ – 6 ha/km RMZ – 10 ha/km with 65% BA retention
RC 2	Streams with fish present and <5 wide (most S3's and S4's)	Variable	Minimum budgets for application to streams in this class: RRZ – 6 ha/km RMZ – 4 ha/km with 65% BA retention
RC 3	Streams in consumptive use watersheds (community and domestic); streams without fish and >10 m wide; streams without fish and 3-10 m wide and <1000 m upstream of a fish-bearing stream; streams without fish and 0.5-3 m wide and <500 m upstream of fish-bearing streams (S5a's, S6a's, some S4's)	Variable	Minimum budgets for application to streams in this class: RRZ – 5 ha/km RMZ – 4 ha/km with 65% BA retention
RC 4	Other medium and small streams without fish and not used for consumptive purposes (S5b's and S6b's)	Variable	Minimum budgets for application to streams in this class: RRZ – 1 ha/km RMZ – 3 ha/km with 30% BA retention
Wetland Class ¹	Definition (wetland type, wetland class ¹)	RRZ/RMZ ² widths and retention levels	Wetland riparian budget minimums to be applied at riparian assessment unit level ³
W1-5	Wetlands >1 ha, wetlands 0.25-1 ha in selected BEC variants, wetland complexes and other wetlands with fish	Variable	Minimum budgets for application to wetlands in this class: RRZ – 2 ha/km of wetland perimeter RMZ – 1.5 ha/km with 30% BA retention
Other Wetlands	Unclassified wetlands without fish	Variable	Minimum budgets for application to wetlands in this class: RRZ – 0.5 ha/km of wetland perimeter RMZ – 1.5 ha/km with 30% BA retention

Spatial deployment of **riparian reserve zones** and management zones (including meeting the minimum budgets outlined above) are determined by an **integrated riparian assessment** (See Guidance Material on riparian assessments).

¹ Riparian stream class groupings (RC1-4), riparian wetland classes (W1-5) and riparian lakeshore classes (L1-4) are based on FPC classes as defined in the BC Forest Practices Code Riparian Management Area Guidebook 1995, except S5a, S5b, S6a and S6b that are defined in Table 1 above; marine shore classes adapted from Clayoquot Sound Scientific Panel 1995.

² RRZ: **riparian reserve zone**; RMZ: **riparian management zone**; LRZ: **Lakeshore Reserve Zone**, LMZ: **lakeshore management zone**; MRZ: **marine shore reserve zone**, MMZ: **marine shore management zone**.

³ Riparian budgets are applied at the level of a **Riparian assessment unit** (generally watersheds or other **landscape level** ecological units of 5,000 – 50,000 ha); budgets and stream lengths are calculated and applied to forested portions of watersheds and **landscape units** (i.e. not in AT or ESSF parkland); budget equivalencies for streams can be calculated by multiplying the ha/km by 5 to get the equivalent width of zone in metres (e.g., 6 ha/km ~ 30 m on each side of a stream); for wetlands, lakeshores and marine shores by multiplying by 10, as there are not two sides (e.g., 1.5 ha/km ~ 15 m). Marine shores are defined as the seaward edge of forest vegetation.

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Table 4 (cont'd). Minimum budgets to be deployed during implementation of integrated riparian assessments. Budgets are to be applied at the Riparian Assessment Unit level.

Lakeshore Class ¹	Definition (lake size and type, lakeshore class ¹)	LRZ/LMZ ² widths and retention levels	Lakeshore riparian budget minimums to be applied at riparian assessment unit level ³
L1-4	Lakes >1 ha, lakes 0.25-1 ha in selected BEC variants and other lakes with fish	Variable	Minimum budgets for application to lakes in this class: LRZ – 1.5 ha/km of lakeshore LMZ – 1.5 ha/km with 30% BA retention
Other Lakeshores	Unclassified lakes without fish	Variable	Minimum budgets for application to lakes in this class: LRZ – 0.5 ha/km of lakeshore LMZ – 1.5 ha/km with 30% BA retention
Marine Shore Class ¹	Definition (marine shore type)	MRZ/MMZ ² widths and retention levels	Marine shore riparian budget minimums to be applied at riparian assessment unit level ³
Open water beaches and low shores	Shores with beaches (e.g., shores of unconsolidated cobbles or sand) or low shores without beaches (bluffs < 5m) adjacent to open waters	Variable	Minimum budgets for application to marine shores in this class: MRZ – 5 ha/km of marine shore MMZ – 3 ha/km with 75% BA retention
Open water bluffs and cliffs	Shores without beaches and with bluffs >5m or steep bedrock cliffs adjacent to open waters	Variable	Minimum budgets for application to marine shores in this class: MRZ – 2 ha/km of marine shore MMZ – 1.5 ha/km with 75% BA retention
Protected waters	Lagoons or estuaries on protected waters	Variable	Minimum budgets for application to marine shores in this class: MRZ – 4 ha/km of marine shore MMZ – 1.5 ha/km with 75% BA retention

Spatial deployment of **riparian reserve zones** and management zones (including meeting the minimum budgets outlined above) are determined by an **integrated riparian assessment** (See Guidance Material on riparian assessments).

¹ Riparian stream class groupings (RC1-4), riparian wetland classes (W1-5) and riparian lakeshore classes (L1-4) are based on FPC classes as defined in the BC Forest Practices Code Riparian Management Area Guidebook 1995, except S5a, S5b, S6a and S6b that are defined in Table yy above; marine shore classes adapted from Clayoquot Sound Scientific Panel 1995.

² RRZ: **riparian reserve zone**; RMZ: **riparian management zone**; LRZ: **Lakeshore Reserve Zone**, LMZ: **lakeshore management zone**; MRZ: **marine shore reserve zone**, MMZ: **marine shore management zone**.

³ Riparian budgets are applied at the level of a **riparian assessment unit** (generally watersheds or other **landscape level** ecological units of 5,000 – 50,000 ha); budgets and stream lengths are calculated and applied to forested portions of watersheds and **landscape units** (i.e. not in AT or ESSF parkland); budget equivalencies for streams can be calculated by multiplying the ha/km by 5 to get the equivalent width of zone in metres (e.g., 6 ha/km ~ 30 m on each side of a stream); for wetlands, lakeshores and marine shores by multiplying by 10, as there are not two sides (e.g., 1.5 ha/km ~ 15 m). Marine shores are defined as the seaward edge of forest vegetation.

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