

# **Merritt Timber Supply Area Sustainable Forest Management Plan**



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# Table of Contents

**VISION STATEMENT .....I**

**EXECUTIVE SUMMARY ..... II**

**1.0 INTRODUCTION AND OVERVIEW ..... 1**

**2.0 THE PLAN AREA..... 2**

**3.0 THE PLANNING PROCESS ..... 3**

**4.0 LINKS TO OTHER PLANNING PROCESSES AND POLICIES..... 9**

**5.0 VALUES AND OBJECTIVES ..... 29**

**6.0 INDICATORS AND INDICATOR MATRICES..... 35**

**GLOSSARY OF TERMS..... 73**

**APPENDIX 1 MERRITT TSA SFM AREA MAP ..... 77**

**APPENDIX 2 SFM PLAN REPORTING FORMAT ..... 81**

**APPENDIX 3 SUMMARY OF PUBLICLY DEVELOPED  
VALUES, OBJECTIVES AND INDICATORS ..... 99**

**APPENDIX 4 PARKING LOT ..... 109**

**APPENDIX 5 LIST OF SPECIES AT RISK ..... 113**

## **Vision Statement**

*The Merritt TSA Sustainable Forest Management Plan will foster forest management practices based on science, professional experience and local public and First Nations input that contribute to the long-term health and productivity of forest ecosystems, a strong economy and thriving communities throughout the Merritt Timber Supply Area.*

## Executive Summary

Between November 2000 and May 2001 the fourteen forest licensees operating in the Merritt Timber Supply Area worked with a group of public and First Nation representatives (the SFM Advisory Group) to develop a Sustainable Forest Management (SFM) Plan.

Members of the SFM Advisory Group represented a cross-section of local interests including recreation, ranching, forestry, conservation, water, community, and First Nations.

The SFM Plan includes a set of values, objectives, indicators and targets that address environmental, economic and social aspects of forest management in the Merritt TSA. The Plan is based on the Canadian Standards Association (CSA) Sustainable Forest Management System, which is one of the primary certification systems currently being used in British Columbia. The CSA system sets performance objectives and targets over a defined forest area to reflect local and regional interests. Consistent with most certifications, the CSA standards expect compliance with existing forest policies, laws and regulations.

Following completion of the SFM Plan and the development of an environmental management system, a licensee may apply for registration of its operating area under the CSA standard. Participants being registered to the CSA standard will be audited by an eligible independent third party auditor.

The SFM Plan is an evolving document that will be reviewed and revised on an annual basis with the SFM Advisory Group to address changes in forest condition and local community values. Each year the SFM Advisory Group will review an annual report prepared by licensees to assess achievement of performance measures. This monitoring process will provide the licensees, public and First Nations with an opportunity to bring forward new information and to provide input concerning new or changing public values that can be incorporated into future updates of the SFM Plan.

The Merritt TSA SFM certification website contains the latest information on the process – including SFM Plan – and can be viewed at:

<http://www.for.gov.bc.ca/dcs/SustainableForestry/SustainableForestry.htm>



# 1.0 Introduction and Overview

In recent years there has been an increasing demand worldwide for certified wood products. This has led to the development of a number of certification systems to provide assurance to consumers that forest products have been produced using environmentally and socially responsible forest practices.

The Canadian Standards Association (CSA) Sustainable Forest Management System is one of the primary certification systems currently being used in British Columbia. The CSA system sets performance objectives and targets over a defined forest area to reflect local and regional interests. The process of CSA certification includes advisory committees composed of a range of public, First Nations, and stakeholder interests.

The Sustainable Forest Management Plan is a “roadmap” to current and future strategies related to long-term performance. The performance measures have been developed using the CSA Z809-02 Sustainable Forest Management; Requirements And Guidance.

The SFM Plan includes six sections:

- Section 1.0 Introduction and Overview
- Section 2.0 The Plan Area
- Section 3.0 The Planning Process
- Section 4.0 Links to Other Planning Processes and Policies
- Section 5.0 Values and Objectives
- Section 6.0 Indicators and Indicator Matrices

Additionally, the plan includes a Glossary of Terms and four appendices:

- Appendix 1 Merritt TSA SFM Plan Area
- Appendix 2 SFM Plan Reporting Format
- Appendix 3 Summary of Publicly Developed Values, Objectives, and Indicators
- Appendix 4 Parking Lot

The values, objectives, indicators and targets described in this document were developed with advice from the SFM Advisory Group. The complete values, objectives, and indicators are provided in Appendix 3.

The SFM Plan is an evolving document that will be reviewed and revised on an annual basis with the SFM Advisory Group to address changes in forest condition and local community values. The Merritt TSA SFM certification website contains the latest information on the process – including SFM Plan – and can be viewed at:

<http://www.for.gov.bc.ca/dcs/SustainableForestry/SustainableForestry.htm>

## **2.0 The Plan Area**

### **2.1 Area Description**

The Merritt Timber Supply Area (TSA) SFM Plan includes the entire TSA area. The Merritt TSA is located in south-central British Columbia and covers approximately 1.13 million hectares of the Southern Interior Forest Region. The TSA is administered by the forest district office in Merritt and the field office in Princeton.

The Merritt TSA includes the mountainous terrain and steep river valleys of the Cascade Mountains in the west and the relatively dry, flat Thompson Plateau in the east. The TSA encompasses two major river systems: the Similkameen and the Nicola. The Merritt TSA is bordered to the north by the Kamloops TSA, to the west by the Lillooet and the Fraser TSAs and to the east by the Okanagan TSA. Manning Park, Cathedral Park and the Canadian/U.S.A border lie to the south.

There are six biogeoclimatic zones within the TSA including (in order of representation): Interior Douglas Fir, Montane Spruce, Engelmann Spruce-Subalpine Fir, Bunchgrass, Ponderosa Pine, and Alpine Tundra. Fire has played an important role in the area and has led to the formation of extensive grasslands and open fir and yellow pine at lower elevations, as well as stands of even age lodgepole pine at mid elevations. A map of the biogeoclimatic zones of the TSA and various other maps can be found at the website: <http://www.for.gov.bc.ca/dcs/Maps/Maps.htm> .

### **2.2 The Natural Resources**

The forest land in the Merritt TSA provides numerous natural resource values, including forest products, forage, mineral, fish, wildlife and recreation and tourism opportunities. Extensive grassland and forested areas provide forage vegetation for both livestock and wildlife.

Lodgepole pine stands, which occupy about two-thirds of the timber harvesting landbase, dominate the forests in the Merritt TSA. Douglas-fir, spruce, ponderosa pine, trembling aspen and subalpine fir are also common. The timber harvesting landbase – the area considered available for harvesting – comprises about 58 per cent of the Merritt TSA.

The diverse landscapes of the Merritt TSA provide a variety of wildlife habitats, including grasslands, lakes and wetlands, forested slopes, and alpine areas. At lower elevations, a greater number of species are present. Mule deer, moose, black bear and many smaller furbearers, as well as many species of birds and amphibians, are common.

## 3.0 The Planning Process

### 3.1 The CSA Certification Process

The Sustainable Forest Management standards were developed by the Canadian Standards Association (CSA) as a voluntary tool to assist responsible forest organizations in moving towards the goal of sustainable forest management. Consistent with most certifications, the CSA standards expect compliance with existing forest policies, laws and regulations.

Participants under the CSA certification system must address the following components:

- Participants must develop and achieve performance measures for on-the-ground forest management, monitored through an annual public review with the input from the advisory group; and,
- Participants who choose to be registered to the CSA standard must internally incorporate CSA-defined systems components that emphasize an appropriate management system.
- Participants being registered to the CSA standard must be audited by an eligible independent third party auditor.

A licensee seeking certification to the CSA Z809 standard is required to develop a licensee-specific plan that is complimentary to the TSA SFM Plan. The licensee-specific plan would contain additional information such as a description of the licensee's Defined Forest Area and internal means to monitor and measure the TSA SFM Plan components.

Applicants seeking registration to the CSA standard require an accredited and independent third-party auditor to verify that these components have been adequately addressed. Following registration, annual surveillance audits will be conducted to confirm that the standard is being maintained. A description of the CSA registration process is as follows.

#### **3.1.1 Public involvement: performance requirements and measures**

The CSA standards include performance requirements for assessing sustainable forest management practices that influence on-the-ground forestry operations. The performance requirements are founded upon six sustainable forest management criteria:

1. Conservation of biological diversity;
2. Maintenance and enhancement of forest ecosystem condition and productivity;
3. Conservation of soil and water resources;
4. Forest ecosystem contributions to global ecological cycles;
5. Multiple benefits to society; and
6. Accepting society's responsibility for sustainable development.

Each of these criteria has a number of "elements" that further define the intent. The criteria and associated elements are all defined under the CSA standards and must be addressed during

## Section 3.0 – The Planning Process

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development of the SFM Plan. The criteria are endorsed by the Canadian Council of Forest Ministers and are aligned with international criteria.

For each set of criteria and elements, forest managers, and the advisory group identify local values and objectives. Indicators and targets are assigned to the values and objectives to measure performance.

**Values** identify the key aspects of the elements. For example, one of the values associated with “species diversity” might be “sustainable populations of native flora and fauna.”

**Objectives** describe the desired future condition, given an identified value. For example, the objective to meet the value of sustainable populations of native flora and fauna might be “to maintain a variety of habitats for naturally occurring species.”

**Indicators** are measures to assess progress toward an objective. Indicators are intended to provide a practical, cost-effective, scientifically sound basis for monitoring and assessing implementation of the SFM Plan. There must be at least one indicator for each element and associated value.

**Targets** are specific short-term (one or two year) commitments to achieve identified objectives. Targets provide a clear, specific statement of expected results, usually stated as some level of achievement of the associated indicator. For example, if the indicator is “reduction in area of the timber harvesting landbase”, a target might be “to have less than x% of harvested areas in roads and landings.”

Values, objectives, indicators, and targets apply to socioeconomic and ecological criteria and may address process as well as on-the-ground forest management activities.

As part of the process of developing values, objectives, indicators and targets, the SFM Advisory Group also assisted in the development of forecasts of predicted results for indicators and targets. This information and interrelationship is further described in Section 6.

**Forecasts** are the long-term projection of expected future indicator levels. These have been incorporated into the SFM Plan targets as predicted results or outcomes for each objective. Forecasting is further described in Section 6.

### **Public Review of Annual Reports and Third Party Audits**

Each year, the licensees will compile a report that summarizes results for each of the performance measures (see Appendix 2: SFM Plan reporting format). This annual report will then be provided to the SFM Advisory Group for review and comment. Annual monitoring of the achievement of the Plan and comparison of the actual results to forecasts will enable the effectiveness of the SFM Plan to be continually improved, in keeping with CSA standards. Licensees registered to the CSA standard will produce a separate annual report specific to their Defined Forest Area.

For licensees registered to the CSA standard, the achievement of performance measures (indicators and targets) will be assessed annually through surveillance audits carried out by a registered third party auditor. The audits confirm that the registrant has successfully implemented the SFM Plan and continues to meet the CSA Standard. Audit summaries are available to the public.

### **3.1.2 Internal Infrastructure: Systems Components**

The CSA SFM system includes a number of process or systems-related requirements called “systems components” as follows:

- **Commitment:** A demonstrated commitment to developing and implementing the SFM Plan.
- **Advisory Group participation:** The CSA standards require informed, inclusive, and fair consultation with First Nations and members of the public during the development and implementation of the SFM Plan. The Merritt SFM Advisory Group was established to provide advice and recommendations to the Merritt TSA Licensees regarding the development of values, objectives, indicators and targets.
- **CSA-aligned management system:** The management system is an integral part of the implementation of the SFM Plan and is designed to meet CSA standards. The management system has four basic elements: 1) Planning; 2) Implementing; 3) Checking and Monitoring; and 4) Review and Improvement. For registration, each licensee has its own management system, the base components including:
  1. Identify environmental risks.
  2. Identify standard operating procedures or develop performance measures to address significant risks.
  3. Develop emergency procedures in the event of an incident causing environmental impacts.
  4. Review all laws and regulations.
  5. Establish procedures for training. Providing updated information and training ensures that forestry staff and contractors stay current with evolving forest management information and are trained to address environmental issues during forestry activities.
  6. If an incident does occur, conduct an investigation or incident review and develop an action plan to take corrective action, based on the preparation undertaken in steps 1-5.
- **Continual improvement:** Within the context of the management system, the effectiveness of the SFM Plan is continually improved by monitoring and reviewing the system and its components. This includes a review of ongoing planning, and public process to ensure that the management system is being implemented as effectively as possible.

### **3.1.3 CSA Registration**

Following completion of a sustainable forest management plan and the development of an environmental management system in accordance with the CSA standard, a licensee may apply for registration of its Defined Forest Area (DFA). The registration of a licensee's DFA will follow a successful registration audit by an eligible independent third party auditor who will assess that:

- an SFM System including quantified targets for meeting sustainable forest management criteria has been established through a public participation process
- the SFM System is being implemented in a forest according to the plan for achieving the forest based sustainable forest management targets
- progress toward achieving the targets is being monitored and learning is being used for continual improvement of the SFM System.

The determination of whether all the components of an SFM system applied to a DFA are in place and functional involves an on-the-ground audit of the DFA including field inspections of forest sites. The intent of the registration audit is to provide assurance that the objectives of sustainable forest management on the DFA are being achieved. A typical registration audit may include:

- meeting with the advisory group facilitator to review the public advisory process
- interviews with public advisory group members
- a review of monitoring and reporting responsibilities related to CSA performance measures
- meetings with government officials to discuss licensee performance and government involvement in development of the SFM Plan
- field reviews visiting harvest operations, road construction operations
- interviews with staff and/or contractors to review their understanding of the environmental management system requirements
- meetings with management to assess the level of commitment to environmental performance and sustainability.

In addition to the registration audit, regular surveillance audits will be conducted to examine performance against all aspects of the SFM System, including the requirement that regulatory standards and policy requirements are met or exceeded.

### **3.2 The Merritt TSA SFM Planning Process**

The SFM Plan was developed by the licensees in the Merritt TSA based on advice and recommendations provided by the SFM Advisory Group. The Plan was developed to be in compliance with all existing legislation and policy.

### 3.2.1 Licensee Participation

All fourteen licensees operating within the Merritt TSA worked with the SFM Advisory Group to develop performance measures (values, objectives, indicators and targets) for the initial SFM Plan. Having all licensees represented during the development of a single SFM Plan (as opposed to 14 individual plans) helped to address the complexities of overlapping licences and volume-based harvesting tenures within the TSA. Today, the involvement of all licensees strengthens the content of the Plan and helps to ensure consistency of implementation across the entire plan area. More importantly, all licensees are committed to the achievement of the Plan and report annually on their performance.

Since the original Plan was developed, new licensees have become involved in the SFM process. Stu'wix Resources Ltd., representing the First Nations Communities, recently acquired a renewable forest licence and is now an active licensee in the Merritt TSA. Stu'wix is committed to achieving the targets in the Plan and reporting annually on performance measures.

Additionally, over the past several years there has been an increasing need to salvage Mountain Pine Beetle mortality in the TSA. In response to this situation, the BC Ministry of Forests and Range has significantly increased the operations of the Small Scale Salvage Program and has awarded several Mountain Pine Beetle Non-Replaceable Forest Licences (NRFLs).

The Ministry of Forests and Range is committed to the achievement of the Plan and will report on performance against the Targets which pertain to the Small Scale Salvage Program. The Ministry of Forests and Range Small Scale Salvage Program will report on the following Indicators; 2-7, 10, 11, 13, 17, 18, 21 and 31.

Licensees holding Mountain Pine Beetle Non-Replaceable Forest Licences (NRFLs) will report on Indicators 2, 4-8, 10-15, 19, 23 and 25.

The following licensees were involved in the development of the initial Merritt TSA Sustainable Forest Management Plan:

- Ardeu Wood Products
- Aspen Planers Ltd
- Mego Wood Products
- Merritt Woodlot License Group
- Nicola-Pacific Forest Products
- NMV Lumber
- Princeton and District Community Forest
- Princeton Forest Products
- Princeton Wood Preservers/Hu'kwa Resources Inc.
- Qwa'eet Forest Products
- Riverside Forest Products  
(now part of Tolko Industries Ltd.)
- Small Business Forest Enterprise Program  
(now known as BC Timber Sales)
- Tolko Industries Ltd.
- Weyerhaeuser Company Ltd.

A map of the current licensee operating areas within the TSA can be found in Appendix 1.

### **3.2.2 Ministry of Forests and Range Participation**

The Ministry of Forests and Range participates in the SFM planning process in a number of roles:

- as a forest licensee for BC Timber Sales (BCTS) (see Section 3.2.1)
- to ensure reforestation in areas with non-replaceable licenses
- to provide technical support to the planning process (see Section 3.2.3)
- to facilitate indicator monitoring & reporting for the Small Scale Salvage Program

### **3.2.3 SFM Advisory Group**

The SFM Advisory Group was formed to assist licensees in developing the SFM Plan by identifying local values, objectives, indicators and targets and evaluating the effectiveness of the Plan.

Members of the SFM Advisory Group represented a cross-section of local interests including forest workers, ranching, resource-based interests, First Nations and Nicola Valley Institute of Technology. An open and inclusive process was used to formulate the public advisory group with newspaper advertisements in the local papers. All local First Nations and stakeholders who have historically expressed an interest in forest management were formally invited to participate. The Ministry of Forests and Range provided technical support to the SFM planning process, providing information and advice to the planning process on resources and policy issues. Numerous requests throughout the process to have the Ministry of Environment (now known as the Ministry of Water, Land and Air Protection) participate as a technical support were unanswered. The group developed and was guided by a Terms of Reference and Procedures, which were consistent with the CSA standard and which also specified that the process for developing the SFM Plan would be open and transparent.

The SFM Plan is an evolving document that is reviewed and revised on an annual basis with the SFM Advisory Group to address changes in forest condition and local community values. Each year the SFM Advisory Group reviews an annual report prepared by licensees to assess achievement of performance measures. This monitoring process provides the licensees, public and First Nations with an opportunity to bring forward new information and to provide input concerning new or changing public values that can be incorporated into future updates of the SFM Plan.

## 4.0 Links to Other Planning Processes and Policies

Resource use planning in British Columbia occurs at a variety of levels ranging from strategic land use plans (LRMPs) to Landscape Unit plans to site specific plans for small areas (e.g., silvicultural prescriptions for individual cutblocks).

Strategic land use plans provide broad direction for the sustainable management of land and resources through the establishment of resource management zones (e.g., protected areas, special management areas and general resource management zones) management objectives and strategies to guide land and resource management activities.

Landscape Unit Plans occur at a smaller scale than strategic land use plans and are intended to ensure that biodiversity objectives identified in provincial forest legislation are met. Landscape Unit Plans address Old Growth Management Areas and wildlife tree retention.

Operational and site plans address resource management at a site specific level and are guided and often regulated by objectives and strategies in strategic land use plans and Landscape Unit plans.

A strategic land use plan (Land and Resource Management Plan (LRMP)) has yet to be initiated in the Merritt TSA. Once an LRMP is completed, provisions that pertain to forest resource uses and management practices may be implemented as legally enforceable provisions by being formally established as “higher level plans” under provincial forest legislation. Examples of forest uses that may be governed under higher level plans include:

- timber production, utilization and related purposes
- forage production and grazing by livestock and wildlife and related purposes
- recreation, scenery and wilderness purposes
- water, fisheries, wildlife, biological diversity and cultural heritage resource purposes
- any purpose permitted by the regulations.

Figure 1 on page 15 illustrates the links between various levels of provincial resource use plans and related policies and procedures.

A number of provincial and local policies and strategies relate to the values, objectives, indicators, and targets in the SFM Plan as follows:

### ***Protected Areas***

The Protected Areas Strategy was established by the provincial government in 1992 with the objective of protecting 12 percent of the province’s land base by the year 2000. In the Merritt TSA, proposed protected areas have been identified and may be established as part of the completion of a higher level plan. Protected areas are established based on their representation of natural diversity, wildlife, wilderness, recreation and cultural and heritage values.

Protected areas are located across the landbase to provide representation of the cross-section of ecosystems. Logging, mining and hydroelectric development are not permitted within protected areas and other resource development activities such as grazing and commercial tourism development, are permitted only in specified areas and under strict guidelines.

### **Forest Ecosystem Management**

The Merritt TSA contains a wide variety of forest ecosystems – grasslands, open grown ponderosa pine and Douglas-fir forests are predominant in the very dry lower elevation of the main valleys with lodgepole pine dominating in the mid-elevation and spruce/balsam at upper elevations. These forest ecosystems have historically been influenced by the presence or absence of fire as a dominant form of natural disturbance. Ecosystems are categorized into natural disturbance types (NDTs) based on fire return intervals and disturbance sizes and patterns. NDTs are used to provide guidance for maintaining biodiversity.

Biological diversity (biodiversity) is the diversity of plants, animals and other living organisms in all their forms and levels of organization. It includes the diversity of genes, species, and ecosystems and the functional and evolutionary processes that link them. The great diversity of physical features and prevailing climatic conditions in the Merritt TSA has resulted in a great diversity of habitats and species. Biodiversity can be affected by the disruption of natural processes. Future maintenance of biodiversity is dependent upon:

- the protection and connectedness of representative ecosystems as ecological benchmarks at the provincial and regional level
- the maintenance and connectivity of representative habitats and seral stages at the landscape and watershed level
- management for important attributes at the stand (site) level
- protection of rare and endangered species and ecosystems.

The intent of forest ecosystem management is to maintain a representation of the biological and physical diversity native to the plan area, and maintain forested ecosystem functions and conditions. To assist in the management of forest ecosystems, detailed Predictive Ecosystem Mapping (PEM) has been completed over the entire landbase of the TSA. PEM is used to provide additional site information such as wildlife habitat, First Nations values and site productivity for strategic and operational planning. As PEM is a living database, it will be continually updated as new site information becomes available.

Key targets within the SFM plan related to the above include:

- maintain well distributed habitat for wildlife tree dependent species (retain wildlife tree patches and individual wildlife trees)
- manage operations to protect rare features and species at risk
- maintain representative old growth forests throughout the plan area
- maintain functional connectivity (movement of plants and animals) at the regional, landscape and stand level
- retain coarse woody debris.

### **Stand level biodiversity**

Strategies related to wildlife tree retention are consistent with the direction in the Landscape Unit Planning Guide with additional consideration for individual large diameter stems in NDT4. Direction from local government agencies through items such as *Douglas fir Management Guidelines* and *Wildlife Tree Patch Retention* policy provide guidance to implement biodiversity measures.

### **Rare Features and Species at Risk**

Existing forest legislation outlines a process for identifying rare features and species at risk which require special management. The species identified as at risk within the Merritt TSA are listed in Appendix 5.

### **Maintain Representative Old Growth Forests**

Strategies for biodiversity include direction to landscape unit planning, identifying areas where conservation is a priority through assignment of biodiversity emphasis options. A strategic land use plan will assign biodiversity emphasis options to each landscape unit in the plan area. Old growth management areas (OGMAs) will be established through Landscape Unit planning. OGMAs will be defined in a manner that is biologically relevant (i.e., considers connectivity, age and spatial distribution, etc.)

### **Connectivity**

Connectivity will be achieved at the Landscape Unit planning level through the placement of OGMAs or by planning for harvested and leave areas that maintain mature/older stands in a connected manner. Riparian management areas, as prescribed in provincial forest legislation, provide connectivity of forested cover along waterways, which are generally areas with high value for wildlife habitat and movement. Local government agencies have provided interim forest connectivity corridors for a few key areas to help licensees manage forest development in areas where landscape level connectivity is at risk.

### **Coarse Woody Debris**

Coarse woody debris (i.e., downed wood) plays an important role in forest ecosystems including provision of food and shelter for invertebrates and smaller wildlife, growing sites for trees, nutrients for soils, and structure in streams to maintain channel stability.

Excessive removal of coarse woody debris (CWD) may affect habitat needs for some wildlife species (e.g., pine marten, fisher, grizzly bear, many small mammals and snakes, some amphibians and numerous invertebrates).

The Southern Interior Forest Region has a number of specific strategies relating to CWD. These strategies include direction for basic levels of CWD, creation of stubs, and guidelines for enhanced levels of CWD in landscape units with high biodiversity emphasis options. These strategies are implemented by the setting of related objectives within Licensee plans. Once included in approved Licensee plans, these objectives must be adhered to.

### **Range**

Significant forest use by grazing tenure holders occurs within the Cascades Forest District. Given the overlap between grazing tenures and forest licenses within the District, recognizing resource values associated with range use of forest land is necessary in any forest management plan and decision. The district assists in communication between forest and range stakeholders.

### **Wildlife**

The Merritt TSA has a great diversity of wildlife including several species that are considered rare at the provincial level. A key management requirement for sustaining wildlife populations is the protection, maintenance and enhancement of wildlife habitat. To address the needs of wildlife habitat, resource managers have recently begun to adopt an ecosystem approach that addresses the needs of many species at a landscape level. However, in following this approach, the habitat needs of certain key species may not be addressed and additional specific actions may be required to deal with these needs (e.g., *Ungulate Winter Range Strategy for the Merritt TSA*).

The Identified Wildlife Management Strategy (IWMS) provides some management direction for rare species, however, it does not address all rare species in the plan area and only addresses site level features (e.g., den or nest sites).

### **Water and Riparian Habitat**

Water is a primary and fundamental resource of the Merritt TSA. Numerous rivers, lakes and streams support many species of fish, such as rainbow trout, kokanee, burbot, mountain whitefish, eastern brook trout, bull trout and steelhead. Coho, chinook and pink salmon spawn in the Nicola River. Significant demands are also placed on water resources for domestic and agricultural purposes. There are currently 10 community watersheds within the Merritt TSA.

The Interior Watershed Assessment Procedure (IWAP) is a program for assessing the cumulative impacts of disturbance to a watershed. IWAPs identify impacts that affect fish habitat and water quality and quantity and include recommendations for mitigating impacts and preventing further impacts from occurring.

Strategies for aquatic and riparian ecosystems in the Merritt TSA are complemented by provincial forest legislation. For example, management within riparian areas is outlined in the *Riparian Management Area Guidebook*. Additionally, the Cascades District has a policy for lakeshore management, including riparian habitat, which included a three year planning process gathering information on over 300 lakes within the Merritt TSA.

### **Forest Industry/Economy**

The forest industry in the Merritt TSA area plays an important role in the regional and provincial economies. Within the Merritt Timber Supply Area (TSA) approximately 20 percent of the productive Crown forest is not considered available for timber harvesting and will provide for environmental values. Of the 1.13 million hectares, approximately 600,000 hectares are considered within the Crown forest landbase and available for harvesting of timber.

Key land and resource issues for the forest industry in the plan area include security of timber supply and increased costs associated with managing other resource values (e.g., forage for

livestock, wildlife habitat, visual quality, etc.). Cost increases are a major concern to the forest industry as they may affect its international competitiveness.

As stated in the socio-economic profile in the *Merritt Timber Supply Review Public Discussion Paper*, the economic benefit to the regional economy from forestry in the private-sector is a major contributor. Forestry is the largest private-sector employer at 24 percent which reflects direct, indirect and induced employment. The potential contribution of the Merritt TSA timber harvest utilizing the current 1.4 million cubic meter annual harvest level equates to approximately 51 million dollars in annual stumpage to provincial revenue and approximately 43 million dollars in total annual employment income for the Merritt region.

#### **4.1 Nicola Similkameen Innovative Forestry Society**

In July 1997, the major licensees together with First Nations and the BC Small Business Forest Enterprise Program (now known as BC Timber Sales) submitted applications for Innovative Forestry Practices Agreements (IFPAs) in the Merritt TSA. To co-ordinate and unify their applications and to develop an innovative approach to forest management, the participants formed the Nicola Similkameen Innovative Forestry Society (NSIFS). Today the Society continues to function effectively by undertaking projects that are aimed at improving forest management decisions and helping to coordinate licensee resource development activities.

Innovative Forest Practices Agreements allow the holders to request an increase in the allowable annual cut (AAC) associated with their replaceable Forest Licences. If acceptable performance is demonstrated and conditions of approval are met, the Ministry of Forests and Range Regional Executive Director may award an AAC increase to the licence holders. This was the case for the members of the NSIFS who were awarded an uplift and are now working towards complying with the Regional Director's conditions in hopes of making the uplift permanent. The relationship between the Nicola Similkameen Innovative Forestry Society and SFM advisory group/ SFM Plan is one of common values such as the use of local participation in identifying important forest values and providing feedback on operational initiatives.

The Vision Statement for the Nicola Similkameen Innovative Forestry Society states:

*Nicola Similkameen Innovative Forestry Society uses innovative forest management practices that incorporate Aboriginal knowledge and values and public involvement in order to increase the productivity of a healthy and resilient working forest. These local forests provide increased forest values, additional investment and enhanced employment opportunities while assuring environmental, economic and social sustainability for communities in the Nicola – Similkameen region.*

#### **4.2 Provincial Landscape Unit Plans**

The Landscape Unit Planning Guide – released March 1999 – provides a foundation for achieving landscape level biodiversity through the achievement of priority objectives for the retention of old growth and wildlife trees. The guide provides clear rules on the development of appropriate objectives for biodiversity conservation based on requirements and direction provided in provincial forest legislation. Landscape units are areas of land and water for long term planning of resource management activities with an initial priority for biodiversity

conservation. They are important in creating objectives and strategies for landscape-level biodiversity and for managing other forest resources.

The establishment of old growth management areas (OGMAs) is a key requirement of provincial forest legislation for managing the conservation of biodiversity. The guide provides direction for determining the area of old growth for each of the three types of biodiversity emphasis areas (high, medium, low) and size and spatial location of OGMAs. Strategic land use plans define target amounts of OGMA for each biogeoclimatic subzone variant and or the timber harvesting land base and the non-timber harvesting landbase.

Wildlife trees provide habitat for a variety of species at the stand level. Although wildlife tree retention is managed at the stand level it contributes to landscape level forest structure.

Landscape unit planning falls into two categories:

- biodiversity planning
- forest resources planning.

Biodiversity planning involves setting objectives for six elements including

- retention of old growth forest
- stand structure through wildlife tree retention
- seral stage distribution
- landscape productivity
- species composition
- temporal and spatial distribution of cutblocks (patch size).

Forest resources planning may include objectives for any of the following resources:

- timber
- recreation
- water
- botanical forest products
- wildlife
- forage
- fisheries.

The first phase of landscape unit planning will focus on the achievement of priority biodiversity objectives for the retention of old growth and wildlife trees. Objectives for non-priority elements may be developed if they do not delay the establishment of objectives for priority biodiversity elements or create an impact on timber supply that exceeds government policy. In some cases, non-priority biodiversity elements may be included as objectives in approved strategic land use plans and will therefore be included in the first phase of landscape unit plans.

### 4.3 Plans, Policies and Management Strategies that Complement the SFM Plan

#### Strategy Guiding the SFM Plan

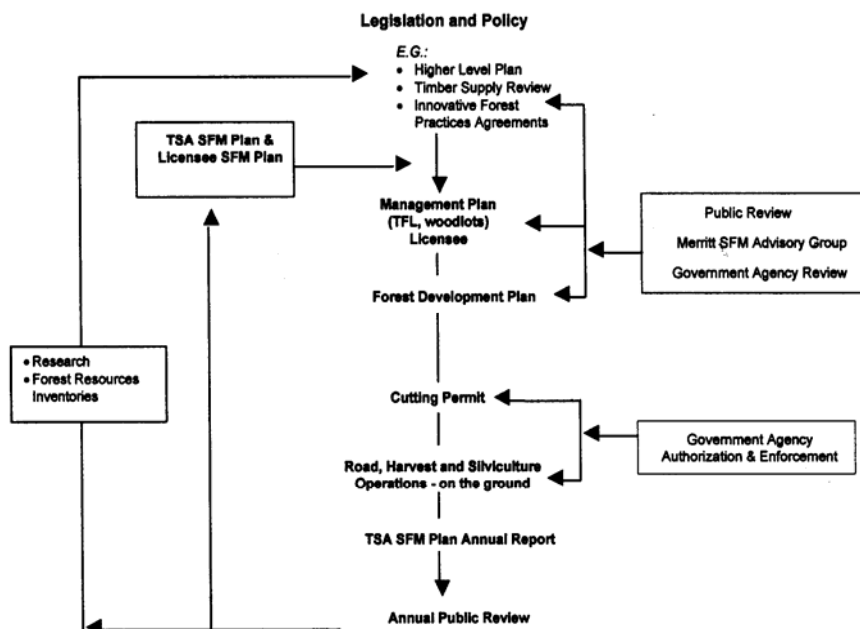
The Merritt TSA Sustainable Forest Management Plan is a strategy that fosters forest management practices based on science, professional experience and local public and First Nations input that contribute to the long-term health and productivity of forest ecosystems, a strong economy and thriving communities throughout the Merritt Timber Supply Area.

A set of strategies has been developed to achieve the SFMP objectives and targets. These strategies document the relevance of the Indicator to the SFMP and sustainability, and summarize actions required to meet the target. Applicable strategies are documented by indicator in Section 6 of the SFMP.

#### SFM Plan in the Planning Hierarchy

The SFM Plan is a complementary plan that demonstrates field level performance of commitments made within this plan and Licensee plans. Figure 1 shows the flow of input and direction to Licensee plans. It also shows the feedback loops of research, monitoring and adaptive management that occur from operations to the SFM plan, higher level plans and Licensee plans.

Figure 1 Links between Plans



The intent is, over the long term, to rigorously apply the management direction provided through the hierarchy of planning shown in Figure 1, combined with regular monitoring and assessment. Through this process, the SFM plan will continue to be updated and improved to incorporate

new information and best management practices based on the most current understanding of effective resource management practices.

### ***Additional Guidance***

There are already several prescriptions contributing to sustainable forest management in existing legislation and policy. The Forest Practices Code and the Forest and Range Practices Act (FRPA), for example, require management along riparian corridors. Current policy requires the identification of old growth management areas and wildlife/leave tree retention areas. There are also numerous policies and guidelines in place at the regional and district levels that contribute to the principles of sustainable forest management including the following:

- **Forest Development Plans:** A forest development plan is a document that describes how harvesting and road development for a specific area will be managed. These plans provide the public and government agencies with information on the location and scheduling of proposed roads and cutblocks for harvesting timber. The plans also demonstrate how forest management will address biodiversity, soil conservation, water, fish, wildlife and other forest resources. Resource stakeholders and the general public must be given an opportunity to provide comments on new harvesting proposals.

Forest Development Plans must comply with the objectives in higher level plans (e.g., LRMPs) and must demonstrate or describe how the objectives and strategies of these plans will be carried through in subsequent plans. Under the new forest legislation, Forest Development Plans are expected to be replaced by Forest Stewardship Plans.

- **Risk Management, Compliance, Enforcement and Audit Procedures:** Operational planning is a process for making on-the-ground forest management decisions in a manner that minimizes risk to environmental, social and economic values.

**Risk** is the potential for loss or damage to environmental, social and economic values resulting from an action or decision in a Licensee plan. An underlying goal in provincial forest legislation is to assess and manage risk. Risk assessment is the process of determining the likelihood of loss or damage occurring and the magnitude of the consequences if a loss or damage were to occur. Risk management involves weighing the assessed risks against the benefits to make the “best” forest management decision. Licensees and their foresters have the responsibility for developing their plans based on acceptable practices and the limits of acceptable risk defined in legislation. Forest Development Plans and Forest Stewardship Plans must be approved by government decision makers. Other Licensee plans are subject to review by request, and/or field auditing. Plans are reviewed in terms of meeting legal and policy requirements and in terms of managing for risks.

**Compliance** activities under provincial forest legislation are aimed at averting non-compliance before it occurs and detecting and addressing non-compliance when it does occur. To ensure compliance, the Forest Service undertakes a risk assessment that looks at several factors including the licensee’s performance capabilities, timing constraints, site specific issues, unusual climatic events and market conditions. Based on the risk assessment, the Forest Service will establish priorities for site inspections. Site inspections are a tool to

assess whether legal requirements and prescriptions in Licensee plans are being met. Licensees are also encouraged to undertake inspections based on the above risk factors. A licensee's own inspections will provide a feedback loop enabling the licensee to continuously reassess risk while operations are underway. If the compliance process is working as it should, enforcement should not be needed.

**Enforcement** provides a means to remedy any failure to meet a regulatory requirement. Enforcement includes both administrative remedies and legal remedies. Administrative remedies are available to Forest Service and other government officials to address contraventions through stop work orders, remediation orders, administrative penalties, suspension and cancellation of licenses, denial of cutting permits, etc. Legal remedies involve prosecutions for offences where the Courts have the power to impose fines or even prison terms when a licensee is at fault.

Periodic independent **audits** may be carried out by the Forest Practices Board to assess compliance with provincial forest legislation. Compliance audits examine current forest planning and practices to determine whether or not they meet requirements. Compliance audits may be either "limited scope" or "full scope". Limited scope audits examine individual forest practices such as timber harvesting, road construction or silviculture and the related Licensee planning activities. Full scope audits examine all forest planning and practices including Licensee planning, road construction, maintenance and deactivation, timber harvesting, silviculture and fire protection. Auditees are randomly selected by the Board. Upon completion of an audit, the Board prepares a public report documenting significant non-compliance with the Code as well as any other information that is worthy of reporting to the public.

- **Public Involvement:** Public and stakeholder involvement in plans such as Forest Development Plan reviews is intended to facilitate the exchange of information between developers and people interested in, or affected by, forest operations.

To ensure that public input can be considered in plan development, comments are submitted to the development proponent in writing. The licensee's response will document actions taken to accommodate public concerns. This formal process ensures public concerns pertaining to items such as recreation features, visual quality, identified trails or other features of significance are identified as early as possible in the planning process to enable the forest licensee to address the request.

Provincial forest legislation requires that licensees consider "known information" on resources during planning. "Known information" is formally made available to licensees through a higher level plan, or by the district manager or designated environment official from BC Environment. Input provided by the public and First Nations contributes to the government data/knowledge prior to the government making the "known information" available to licensees for planning.

Licensees in the Merritt TSA have a long-standing commitment to work with directly affected stakeholders and members of the public on forest management issues and there is a

well-established history of participation in community meetings, including local planning processes. This continues to be achieved by licensees maintaining an established stakeholders list and advising those on the list of proposed activities contained within their proposed development plan (FDP). The broader public is also asked to participate in FDP proposals through newspaper advertisements and open houses. In addition, licensees are committed to providing topical education updates on forest management issues during public meetings. Members of the public participate in local planning processes and meetings on forest management issues. Licensees are committed to making ongoing efforts to improve the effectiveness of public processes in the Merritt TSA.

- **Access Management:** Access Planning is coordinated by government with input from public and other stakeholders (usually through land use planning processes). Forest licensees and proponents from other resource industries follow the advice and direction set by the government agencies through these planning processes. Access planning considers the condition of access, maintenance, deactivation and access restrictions related to long term objectives for an area. This includes identifying potential impacts on resources such as wildlife, recreation, sensitive ecosystems, or other values due to open public access and introducing public access controls, where required.
- **Vertical Structure:** During forest development planning, licensees incorporate a number of strategies for maintaining diversity of structure and function within cutblocks. These include wildlife/leave tree retention, either in single trees or patches, as described in the *Landscape Unit Planning Guide*. During operational activities, tree species of merchantable size will be retained, where this is in keeping with safety standards of the Worker's Compensation Board. This includes retention of green trees that will act as future wildlife trees including deciduous trees and conifers that have characteristics that make them suitable as future wildlife/leave trees, such as large diameter and height, structural features such as cavities, loose bark, or dead tops, and signs of damage or rot. It also includes retaining trees of suitable quality and productivity that can act as seed trees to aid in the natural regeneration of harvested areas. Locating wildlife/leave trees in unique microsites, in known habitat areas, and along riparian areas can contribute to long-term forest function and biodiversity.

Natural processes will be allowed to take their course within wildlife tree patches, where this does not threaten merchantable trees in adjacent areas. Trees that burn, are attacked by insects, or are blown down will still contribute to biodiversity goals. However, the intent is to provide wildlife tree patches that are windfirm and that will provide standing live and dead trees for habitat within or on the edge of harvested areas for the course of the rotation.

Other aspects of maintaining structural diversity within cutblocks include providing a diversity of tree species, maintaining understory vegetation, and retaining coarse woody debris on sites after logging.

- **Forest Health Management:** Licensees address forest pest/health issues at the operational level. Hazard and risk assessments for stands are used to define objectives and strategies that guide forest managers in controlling and managing forest health concerns. Managing for health must take into account the natural variability and cyclical variations that occur on the

landscape. Management for forest health includes both preventive action and proactive response measures. Examples include participation in overview flights, focused reconnaissance action resulting from overview flights, strategies and coinciding action plans, communication, implementation and review.

In the Merritt TSA, there is presently one catastrophic forest health agent, Mountain Pine Beetle (MPB). MPB is a natural forest replacement agent and reaches epidemic levels in decadent stands of lodgepole pine. Many of the lodgepole pine forests in the TSA are older, making them susceptible to insect and disease attacks. A summary of the current situation is described based on excerpts from:

- Timber Supply And The Mountain Pine Beetle Infestation In British Columbia Ministry Of Forests Forest Analysis Branch October, 2003
- Oct. 30, 2003 Ministry Of Forests Backgrounder; Timber Supply Analysis Mountain Pine Beetle Infestation

The mountain pine beetle (MPB), *Dendroctonus ponderosae* Hopkins (Coleoptera: Scolytidae), is the most damaging insect attacking lodgepole pine forests in BC. Mountain pine beetles exist naturally in mature lodgepole pine forests, at various population levels, depending on pine availability and weather conditions. They play an important role in the natural succession of these forests by attacking older or weakened trees, which are then replaced by younger, healthy forests. The beetle population levels in British Columbia's interior have been increasing steadily since 1994 with an exponential increase seen in 2004 as a result of the 2003 beetle flight.

### **Area Affected**

Sixty-eight percent of the area in the TSA has lodgepole pine (Pl) as the leading species. Beetle susceptibility models would suggest that the majority of the Pl stands in the TSA will have MPB populations within them in the next eight years. Recently, both the rate of spread and the attack intensity have increased. The 2005 aerial overview surveys for the Merritt TSA resulted in classifying about 75 768 ha as red attacked. This represents a 2.2 fold increase in area affected in the Merritt TSA from 2004 to 2005. Red-attacked trees are those that were attacked and killed in the previous year.

### **Factors Influencing the Severity of Attack**

Two key factors contributing to the recent expansion of the mountain pine beetle infestation are the large amounts of older lodgepole pine on the land base and the relatively warm weather conditions experienced in recent years in the interior of the province. Both fire and insects have historically played an important role in the natural disturbance and replacement of lodgepole pine forests in much of the province's interior. However, fire control measures undertaken to protect the forest resource, infrastructure and private property have contributed to an accumulation of old pine forest above historical levels.

Once lodgepole pine trees are mature (generally older than 80 years), they are highly susceptible to attack by the pine beetle particularly during times of prolonged favourable weather conditions. Experts concur that moderated climate conditions coupled with the

increasing amount of susceptible, mature lodgepole forests has led to the current, unprecedented mountain pine beetle outbreak.

### **Environmental impacts of the beetle infestation**

Before extensive fire suppression, BC's central interior forests naturally underwent relatively frequent and large-scale stand replacing events brought on by wildfire and insect outbreaks.

Fires and insect outbreaks have been a part of normal ecosystem dynamics in BC, most likely for many thousands of years. However, much more of the province is now occupied by older pine forests than historically has been the case. With the epidemic population of mountain pine beetles and the abundance of susceptible mature pine, the rate of conversion from older to younger forested habitats will be increased, by insect attack followed by eventual blowdown, or by harvesting to control the rate of spread and salvage the attacked timber. Even with harvesting, both live and dead stands unaltered by harvesting will remain on the landscape. Nonetheless, both the epidemic beetle population and timber harvesting, either for insect control or for salvage, will result in complex consequences for pine forests and associated wildlife habitats in BC's interior.

### **Outlook**

There is no indication the spread of the infestation will slow significantly without sufficiently cold weather to kill the developing beetle brood. Temperatures need to reach  $-30^{\circ}\text{C}$  in the early fall or late spring when the beetles are not fully in their "overwintering state" or have sustained winter temperatures of less than  $-40^{\circ}\text{C}$  to kill the brood. If the beetle is not stopped due to climatic conditions, populations will only collapse when they encounter a shortage of acceptable, mature pine.

### **Strategy and Response**

Given the economic importance of lodgepole pine and the potential impact of the current beetle infestation on forest-dependent communities in BC's interior, the forest industry and government jointly created the Mountain Pine Beetle Emergency Task Force in 1999 to manage and reduce the impact of the infestation. The Task Force has helped to ensure that management strategies are well-planned and as effective as possible. These strategies have been aggressive and have been successful in making a difference in reducing the spread of the infestation and limiting the amount of killed timber in some areas. However, in some areas that have extremely high beetle populations, even with aggressive control measures and harvesting strategies, stands of beetle-killed timber are being left behind.

The Ministry of Forests and Range (MOFR) and the forest industry have been actively trying to control and manage the mountain pine beetle infestation in the TSA. Licensees have been dedicating a significant portion of their harvest to management efforts aimed at the infestation. To manage the impacts of Mountain Pine Beetle on the lodgepole pine timber supply, the following management strategies are used:

- i. Harvest (large block to small patch);
- ii. Pheromone bait and hold (outside existing milling, development or harvesting capacity);

- iii. Abandon (where stand is inaccessible, not viable, low risk, other resource values taking precedence, etc.).

The Cascades Forest District and each licensee work together to prepare a Unit strategy beetle management plan, which becomes an integral part of the Forest Development Plan. That plan identifies priorities and commitments of licensee's and the MOFR for the year. The plan is updated regularly throughout the year.

Monitoring licensee achievements is best accomplished by evaluating their adherence to the management strategy. The MOFR measures the overall area affected by MPB on an annual basis to indicate the success of the strategy. Other factors influence the overall area affected many of which are outside the control of the licensee or government. Those factors include:

- i. Market volatility (selling prices, tariffs);
  - ii. Favourable or unfavorable beetle brood conditions (i.e. warm autumns and winters verses early cold autumns and hard cold winters);
  - iii. Pattern of spread (sporadic verses concentrated, ratio of attack);
  - iv. Location of attack (i.e. is it inaccessible, including reserve zones);
  - v. Protected areas, parks, areas of interest, topographically challenged areas, et cetera;
  - vi. Union or contract disruptions; and
  - vii. Fire season shutdowns.
- **Seed and Vegetative Material Transfer Guidelines:** Seed and vegetative material transfer guidelines are intended to minimize the risks of maladaptation or growth loss associated with regenerating trees (planted from seed or vegetative material) in a different location from their source. Transferring seeds or vegetative materials beyond the limits specified in the guidelines may decrease productivity or increase susceptibility to frost, insects or disease. With respect to genetic diversity, these guidelines geographically limit the amount of natural change and spread of seed or vegetative material over the landscape. The transfer guidelines must be adhered to when prescribing reforestation measures in Licensee plans.
  - **Noxious and Invasive Weeds:** Noxious weeds are non-native plant species that can be difficult to control. They can have a significant impact on agriculture and timber production, reducing forage production for livestock and wildlife and threatening forest regeneration. They may also alter the structure of natural plant communities, threatening biodiversity.

The most effective strategy for controlling noxious weeds is to prevent their establishment. Once established, the cost and difficulty of controlling noxious weeds increases significantly. Licensees have committed to promptly re-vegetating road cuts and fills in order to reduce the spread of noxious weeds.

- **Forest Industry-Caused Wildfires/Prescribed Burning:** The forest industry has numerous legal requirements to minimize the potential for wildfires being started by forest operations. Each year, licensees are required to prepare and submit a fire Preparedness Plan to the Ministry of Forests and Range providing details on the location of personnel and equipment in the event of a wildfire. Employees and contractors are trained and knowledgeable in

preventing and actioning wildfires. As well, licensees monitor fire weather indices, which help determine the level of risk in terms of forest operations. However, human safety and potential loss of resources plays a role in strategies to control loss.

Wildfires are a natural part of ecosystem rejuvenation. It is beneficial and necessary to maintain a healthy forest and the diversity of plant and animal life. Through evolution and exposure to wildfires, many plants and animals have adapted to fires and in fact actually depend on it. Recent human activities have altered fire regimes in much of the lower elevation ecosystems, fostering litter accumulation and forest encroachment in some grasslands, and changing canopy composition and density in some forested areas. Prescribed burning is being considered by the Ministry of Forests as a tool for ecosystem management. Licensees will participate in discussions with the Ministry of Forests and Range where prescribed burning will effect timber supply.

- **Free to Grow Silviculture Practices:** A free growing stand is defined in provincial forest legislation as a healthy stand of trees of a commercially valuable species, the growth of which is not impeded by competition from plants, shrubs or other trees.

Prior to 1987, all stand establishment to the free to grow stage on Crown lands was funded by the Ministry of Forests and Range. With a change to the Forest Act that year, stand establishment (basic silviculture) became the financial responsibility of the licensee. A typical or normal assessment regime for each site prior to claiming free growing status is:

- i. A post harvest survey confirms whether or not the treatments in the Silviculture Prescription (SP) and Forest Development Plan or Site Plan regarding slash loading and disposal, site preparation, regeneration method and timing still apply. If necessary, approvals may be requested from Ministry of Forests and Range through amendments.
- ii. Where natural regeneration had been prescribed, a stocking survey is made at least two years prior to the end of the regeneration delay period. If it appears the target will not be met, alternate actions – which may include one or more of mechanical site preparation, weed control, or planting – will be undertaken. If necessary, an amendment is made.
- iii. A survival survey generally occurs approximately one year after planting. If necessary, a fill plant or a replant is scheduled.
- iv. At least one regeneration performance survey is made to confirm stocking status three years after planting or three years after declaring an area stocked naturally. If needed, fill planting or weed control is scheduled.
- v. A free growing survey is made near the early free growing date. Necessary weeding or spacing treatments are scheduled. The free growing survey will use the inventory label, which is a combination of coniferous tree species acceptable within the silviculture regime and other indigenous coniferous and deciduous species.
- vi. A final free growing survey is carried out near the end of the late free growing date.

The regeneration date is the date by which at least the minimum number of healthy well-spaced trees of the preferred and acceptable species per hectare must be established and subsequently maintained until the stand is declared free growing. The free growing

assessment period is the time within which a free growing stand must be established as required in the Licensee plan. A survey must be conducted on or before the latest free growing date to determine whether the number of free growing trees per hectare meets the number set in the Licensee plan.

- **Quality of seed for revegetation of right-of-ways:** Forest licensees sow grass seed for two reasons: 1) noxious weed control; and, 2) erosion prevention. The seed used for revegetation is graded by Agriculture Canada to protect against the presence of noxious weeds and other unwanted species. Measures used to ensure seed quality in the production cycle include sowing seeds with clean equipment, crop inspection, crop certificate permitting seed from inspected crop to be sold as certified seed, seed crop harvested with clean equipment, seed inspected, graded and sealed to Canada Seeds Act requirements by Agriculture Canada.
- **Genetic diversity:** The process for developing seedlings in provincial seed orchards is closely regulated by BC's chief forester to ensure that genetic diversity and seedling quality is maintained. The Chief Forester appoints the Tree Improvement Council (TIC) to provide advice on the provincial tree improvement program including issues of seed production, genetic gain, and gene resource management.

To conserve the genetic diversity of the province's forests, tree breeders collect hundreds of samples of tree species. Collections range from places where the species are found in large quantities to isolated populations at the edge where they grow naturally. Breeders ensure that enough trees are selected to provide a level of diversity that will buffer future forests from environmental extremes and insect and disease attacks. In addition to breeding protocols, the genetic diversity of British Columbia's trees is protected in parks and protected areas or in special reserves which are established by making "duplicates" of parent trees.

Seed orchard trees and the seed they produce are not genetically modified. The Ministry of Forests and Range licenses seed orchards in British Columbia. These orchards produce registerable seedlots from trees, or the offspring of trees, selected from wild stands.

- **Determination of Forest Practices Code contravention:** If a contravention is reported, a letter is sent to the licensee with notification of investigation/inspection (data gathering). The licensee will be given the opportunity to be heard (sharing data) and the District Manager (Ministry of Forests and Range) will make a determination based on information from all parties. If the contravention is confirmed, the licensee may appeal the ruling and/or the penalty levied.
- **Road construction and maintenance procedures:** Certain soil types are sensitive to disturbance especially from road construction and harvesting activities involving mobile equipment such as excavators and skidders. These sensitive soils are identified in advance to help prevent/minimize soil compaction, poor drainage, puddling and soil displacement which result in loss of productive forest sites. With respect to forest roads, the soil and water information collected during the planning phase and future expected use of the road are used to determine the type of road constructed and level of maintenance, deactivation or

rehabilitation to be prescribed. Deactivation and rehabilitation provides a distinction between the varying construction standards and duration of roads as follows:

- deactivation: activities are designed to control water and maintain natural drainage patterns based on the risks associated with the long term use of road access. Activities include: cross ditches, waterbars, backup drainage control or removing culverts and bridges, seeding and revegetation and pulling back of material (recontouring or returning material).
- rehabilitation: some of the same prescriptions above may be completed to control water and maintain natural drainage; however, the intent is to have the site capable of growing a productive crop of trees. Potential strategies may include pulling back of material (recontouring or returning material), seeding and revegetation and decompaction.

There are two administrative categories of road types: status and non status.

- i. Status roads are ones held under road permit or road use permit by licensees giving the company responsibility for maintaining it. There are two types of status roads:
  - *permanent roads* are long term roads that may be deactivated for control of water
  - *temporary roads* are short term roads that will be rehabilitated – including water management – to return the area into a productive growing site
- ii. Non-status roads have no assigned permit holder and responsibility is that of the Crown (usually old trails and roads)

Forest Development Plans document plans for road construction and deactivation of permanent roads. Communication and input by the public, other resource users and resource agencies is important to ensure access meets necessary requirements. As a requirement under the Forest Practices Code, licensees are responsible for inspection of roads based on a risk frequency.

- **Allowable Annual Cut (AAC) determination:** The AAC is the allowable rate of timber harvesting in a management unit such as timber supply area (TSA) or a tree farm licensee (TFL). The AAC is set for each of the province's 37 timber supply TSAs and TFLs by the Chief Forester.

The timber supply is the rate at which timber is made available for harvesting. It is a measure of the potential flow of logs out of the forest. It is not the same as the inventory or amount of wood in the forest. The size and productivity of a given area of land available for timber harvesting (timber harvesting land base) are the factors that are used to determine the amount of timber that can be produced over time. Economic, environmental and social factors also affect the rate of timber harvesting and the methods used. Economic factors may include prices for wood products, location and quality of timber, costs of production, etc. Environmental factors may include wildlife habitat, riparian buffers, environmentally sensitive areas, etc. Social factors may include visual appearance of the landscape, drinking water quality and supply, etc.

Timber supply analysis is a process that explores the effects on timber supply of existing or possible future forest management strategies and alternative timber harvesting levels. The analysis makes it possible to compare how alternative management strategies affect forest structure and timber production over time. The steps in timber supply analysis to support AAC determination include:

- i. *Categorize the land base* – define the timber harvesting land base by separating lands suitable for timber production from lands unavailable or inappropriate for timber production (e.g., protected areas or inaccessible terrain). Lands outside of the timber harvesting land base are still part of the provincial forest and contribute to and are managed for other values (e.g., wildlife habitat, old growth).
- ii. *Project growth and yield* – growth and timber yield are projected for each stand based on current management. These projections show the characteristics of a stand (e.g., timber volume per hectare, average stem diameter) at different ages.
- iii. *Identify management activities and requirements* – current management practices – including those that enhance timber production (e.g., planting) and those that maintain or enhance other values (e.g., wildlife habitat, visual quality) – are identified and the amount and timing of each activity is specified. It is often necessary to restrict some activities in some areas to achieve multiple objectives.
- iv. *Model timber supply based on current management* – a computer model is used to simulate the way a stand grows and is harvested over time.
- v. *Run sensitivity analyses* – sources of uncertainty in the data and management assumptions are analyzed to determine which factors most affect analysis results (e.g., where small changes in a management objective can cause large changes in timber supply). This knowledge helps to establish priorities for collecting new information and indicates where caution is required in interpreting results.

In setting an AAC, the Chief Forester considers information such as biodiversity, wildlife, and the social impacts of changes to timber supply including:

- ⇒ the rate of timber production that may be sustained from the area;
- ⇒ the short- and long-term implications to the province of alternative rates of timber harvesting from the area;
- ⇒ constraints on the amount of timber produced from the area due to use of the forest for purposes other than timber production;
- ⇒ the nature, production capabilities and timber requirements of established and proposed processing facilities;
- ⇒ the economic and social objectives of the Crown, for the area, the region and the province, as expressed by the Minister of Forests; and,
- ⇒ abnormal insect or disease infestations and major salvage programs planned for the area.

Ultimately the Chief Forester's AAC determination is based on independent professional judgment.

- **Terrain stability:** The Merritt TSA has significant climatic variations from wetter coastal type conditions in the west to drier conditions the further you move away from Cascade mountains. Steep slopes and terrain conditions in the entire Merritt TSA have the potential to contribute to landslides and surface soil erosion. Landslides are a natural and inevitable phenomenon that contributes to the evolution of the landscape. Although landslides occur in both logged and unlogged terrain, logging and road building can increase their frequency. Impacts of landslides include acceleration of sediment delivery to streams, possible damage to fish and invertebrate habitat and productivity, loss of forest site productivity, unsightly scars and damage to roads, culverts and bridges. The Forest Practices Code has comprehensive steps to aid in the identification and mitigation of industry caused landslides<sup>1</sup>. Since the FPC inception in 1995 all development of roads and cutblocks is consistent with the tools established in the legislative framework. The following are examples of the process undertaken to minimize landslides:
  - i. Assess all Class IV and V terrain prior to road construction or harvesting to evaluate terrain stability and provide recommendations on:
    - whether or not development should proceed
    - best road and cutting boundary locations or changes to proposed layout or road alignment
    - riparian management areas
    - possible mitigative actions and criteria
    - road construction and harvesting constraints or special techniques.
  - ii. Inspections of drainage ditches and culverts regularly and take preventative measures to minimize the potential for debris flow initiation and soil erosion.
- **Global climate change:** Global climate change refers to a change in climate caused by a buildup of greenhouse gases in the earth's atmosphere. Greenhouse gases such as carbon dioxide trap heat which in turn raises the earth's average temperature and alters the global climate. Some of the worst case scenarios associated with global climate change include rising ocean levels, summer water shortages and drought in some regions, and dying forests and wildfires. A key source for the buildup of greenhouse gases in the atmosphere is through emissions from fossil fuels.

One of the ways to offset the buildup of greenhouse gases is through the maintenance and establishment of carbon sinks – either naturally or through the use of technology. Carbon sinks capture and store carbon and keep it out of the atmosphere. Productive forests are a good example of a carbon sink. Growing trees sequester (absorb) carbon dioxide from the atmosphere through the process of photosynthesis and convert it and store it the form of cellulose.

There is debate as to whether managed forests (i.e., harvesting and post harvest silvicultural treatments) contribute to an increase or decrease in the natural carbon storage capacity of a forest. In general it is believed that managed forests that increase the average rotation age

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<sup>1</sup> Guidelines were developed in 1995 therefore, the SFM plan indicator/objective refers to occurrences after 1995.

beyond that which occurs through natural disturbances (i.e., fire) contribute to an increase in carbon storage capacity<sup>2</sup>. This means that for interior forests where the typical managed stand rotation is greater than the average cycle of stand-replacing natural disturbances, there is likely to be an increase in carbon storage capacity, assuming that natural disturbances (e.g., fire) are suppressed. Additionally, studies have determined that the total ecosystem carbon storage increases as the age of the forest increases toward maturity. This means that a managed forest with an older age class distribution is likely to provide increased carbon storage over a forest with a younger age class distribution.

- **Temperature Sensitive Streams:** High stream temperatures are known to be a problem for fish during mid to late summer. Some streams within the Merritt TSA have been identified as being “temperature sensitive”. The highest stream temperatures typically occur on clear days in late summer when streamflows are low and the sun is still fairly high in the sky. Direct solar radiation is the major source of stream heating so any source of shade has a moderating effect on temperature.

Forest operations generally occur in the mid to upper elevations and many other watershed users in lower elevations have a strong influence on stream temperature. The effect of harvesting on stream temperature is not clear and the key is to identify streams where temperature is a forestry issue and to manage shade in those areas. Ongoing and future research will improve our forest and land managers ability to manage for stream temperature.

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<sup>2</sup> See Price et al, “Comprehensive assessment of carbon stocks and fluxes in Boreal-Cordilleran forest management unit, *Canadian Journal of Forest Resources*, 30 July 1997.



## 5.0 Values and Objectives

The following local values and objectives were identified by the SFM Advisory Group to address each of the criteria and associated elements prescribed by the CSA standards. A number of indicators and associated targets have been developed to meet these local values and objectives. These are referenced by number in the following tables. Each of the indicators and targets are described in more detail in Section 6. A summary table showing all criteria and elements and associated local values, objectives, and indicators is provided in Appendix 3.

### **Criterion 1: Conservation of Biological Diversity**

Conserve biological diversity by maintaining integrity, function, and diversity of living organisms and the complexes of which they are part.

#### **Element 1.1: Ecosystem Diversity**

Conserve ecosystem diversity at the landscape level by maintaining the variety of communities and ecosystems that naturally occur in the DFA.

Local Values	Objectives	Indicators/Targets
<ul style="list-style-type: none"> <li>▪ Functioning ecosystems that support natural processes</li> </ul>	<ul style="list-style-type: none"> <li>▪ Functional ecosystems including:               <ul style="list-style-type: none"> <li>– representation of natural attributes</li> <li>– maintenance of a full range of seral stage distribution</li> <li>– maintenance of a full range of habitat</li> <li>– retention of vertical structure for stand level attributes.</li> </ul> </li> </ul>	2, 3, 33, 34

#### **Element 1.2: Species Diversity**

Conserve species diversity by ensuring that habitats for the native species found in the DFA are maintained through time.

Local Values	Objectives	Indicators/Targets
<ul style="list-style-type: none"> <li>▪ Sustainable populations of flora and fauna native to the DFA and the abundance and distribution of species within their natural range of variation</li> </ul>	<ul style="list-style-type: none"> <li>▪ Species native to the DFA are maintained at sustainable and balanced levels</li> </ul>	2, 5, 6, 7

**Element 1.3: Genetic Diversity**

Conserve genetic diversity by maintaining the variation of genes within species.

Local Values	Objectives	Indicators/Targets
<ul style="list-style-type: none"> <li>▪ Genetic diversity within all native species</li> <li>▪ Genetic diversity conserved without the use of biological/genetic engineering</li> </ul>	<ul style="list-style-type: none"> <li>▪ Maintain genetic diversity of all species native to the DFA</li> </ul>	2, 6, 8

**Element 1.4: Protected Areas and Sites of Special Biological Significance**

Respect protected areas identified through government processes. Identify sites of special biological significance within the DFA and implement management strategies appropriate to their long-term maintenance.

Local Values	Objectives	Indicators/Targets
<ul style="list-style-type: none"> <li>▪ Natural functioning ecosystems</li> <li>▪ Rare physical environments</li> </ul>	<ul style="list-style-type: none"> <li>▪ Maintenance of representative natural, and rare, functioning ecosystems</li> </ul>	7, 33

**Criterion 2: Maintenance and Enhancement Of Forest Ecosystem Condition And Productivity**

Conserve forest ecosystem condition and productivity by maintaining the health, vitality, and rates of biological production.

**Element 2.1: Forest Ecosystem Resilience**

Conserve ecosystem resilience by maintaining both ecosystem processes and ecosystem conditions.

Local Values	Objectives	Indicators/Targets
<ul style="list-style-type: none"> <li>▪ Resilient forest ecosystems</li> </ul>	<ul style="list-style-type: none"> <li>▪ Forest management does not compromise forest ecosystem resilience</li> </ul>	3, 5, 9

**Element 2.2: Forest Ecosystem Productivity**

Conserve forest ecosystem productivity and productive capacity by maintaining ecosystem conditions that are capable of supporting naturally occurring species.

Local Values	Objectives	Indicators/Targets
<ul style="list-style-type: none"> <li>▪ Productive, well-functioning forest ecosystem</li> </ul>	<ul style="list-style-type: none"> <li>▪ Forest ecosystems that support a full range of values</li> </ul>	3, 10, 36

**Criterion 3: Conservation of Soil and Water Resources**

Conserve soil and water resources by maintaining their quantity and quality in forest ecosystems.

**Element 3.1: Soil Quality and Quantity**

Conserve soil resources by maintaining soil quality and quantity.

Local Values	Objectives	Indicators/Targets
<ul style="list-style-type: none"> <li>▪ Soil productivity</li> </ul>	<ul style="list-style-type: none"> <li>▪ Soil qualities that sustain forest ecosystem productivity</li> </ul>	12, 13, 14

**Element 3.2: Water Quality and Quantity**

Conserve water resources by maintaining water quality and quantity.

Local Values	Objectives	Indicators/Targets
<ul style="list-style-type: none"> <li>▪ Clean drinking water</li> <li>▪ Naturally functioning watersheds</li> <li>▪ Water quality and quantity</li> <li>▪ Integrity of soil and water systems</li> </ul>	<ul style="list-style-type: none"> <li>▪ Watersheds that function within the natural range of variability</li> <li>▪ Water quality and quantity that maintains existing uses and supports communities (human and ecological) and aquatic life</li> </ul>	2, 15, 16, 32

**Criterion 4: Forest Ecosystem Contributions to Global Ecological Cycles**

Maintain forest conditions and management activities that contribute to the health of global ecological cycles.

**Element 4.1: Carbon Uptake and Storage**

Maintain the processes that take carbon from the atmosphere and store it in forest ecosystems.

Local Values	Objectives	Indicators/Targets
<ul style="list-style-type: none"> <li>▪ Well-functioning forest ecosystems</li> </ul>	<ul style="list-style-type: none"> <li>▪ Conduct forest activities to maintain ecological processes that facilitate carbon uptake and storage</li> </ul>	9, 10, 11, 34, 36

**Element 4.2: Forest Land Conversion**

Protect forestlands from deforestation or conversion to non-forests.

Local Values	Objectives	Indicators/Targets
<ul style="list-style-type: none"> <li>Forest land base maintained for forest uses</li> </ul>	<ul style="list-style-type: none"> <li>Maintenance of a healthy, productive forest land base</li> </ul>	12, 17, 18

**Criterion 5: Multiple Benefits to Society**

Sustain flows of forest benefits for current and future generations by providing multiple goods and services.

**Element 5.1: Timber and Non-Timber Benefits**

Manage the forest sustainably to produce an acceptable and feasible mix of both timber and non-timber benefits.

Local Values	Objectives	Indicators/Targets
<ul style="list-style-type: none"> <li>Forests contribute to the quality of life</li> </ul>	<ul style="list-style-type: none"> <li>Opportunity and access to the forest resource for a variety of uses</li> </ul>	21, 22, 23, 31

**Element 5.2: Communities and Sustainability**

Contribute to the sustainability of communities by providing diverse opportunities to derive benefits from forests and to participate in their use and management.

Local Values	Objectives	Indicators/Targets
<ul style="list-style-type: none"> <li>Sustained multiple benefits from our forests</li> </ul>	Productive forest resource maintaining a continual and balanced flow of benefits.	18, 20, 25, 26, 29, 30, 31

**Element 5.3: Fair Distribution of Benefits and Costs**

Promote the fair distribution of timber and non-timber benefits and costs.

Local Values	Objectives	Indicators/Targets
<ul style="list-style-type: none"> <li>Economic benefits to society</li> </ul>	<ul style="list-style-type: none"> <li>A prosperous forest-based economy with a sustainable supply of forest resources</li> </ul>	16, 19, 20, 29

**Criterion 6: Accepting society’s responsibility for sustainable development**

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

**Element 6.1: Aboriginal and Treaty Rights**

Recognize and respect Aboriginal and treaty rights.

Local Values	Objectives	Indicators/Targets
<ul style="list-style-type: none"> <li>Aboriginal and treaty rights</li> </ul>	<ul style="list-style-type: none"> <li>Meaningful participation by First Nations in forest management planning</li> </ul>	4, 25, 30

**Element 6.2: Respect for Aboriginal Forest Values, Knowledge, and Uses**

Respect traditional Aboriginal forest values and uses identified through the Aboriginal input process.

Local Values	Objectives	Indicators/Targets
<ul style="list-style-type: none"> <li>Respect for Aboriginal interests and values</li> </ul>	<ul style="list-style-type: none"> <li>Interests and values of First Nations accommodated in forest management decisions</li> </ul>	4, 25, 26, 30

**Element 6.3: Public Participation**

Demonstrate that the SFM public participation process is designed and functioning to the satisfaction of the participants.

Local Values	Objectives	Indicators/Targets
<ul style="list-style-type: none"> <li>Shared knowledge and informed decisions</li> </ul>	<ul style="list-style-type: none"> <li>SFMP public participation process is guided by informed, fair and open consultation</li> </ul>	24, 27, 35

**Element 6.4: Information for Decision-Making**

Provide relevant information to interested parties to support their involvement in the public participation process, and increase knowledge of ecosystem processes and human interactions with forest ecosystems.

Local Values	Objectives	Indicators/Targets
<ul style="list-style-type: none"> <li>Shared knowledge and informed decision-making</li> </ul>	<ul style="list-style-type: none"> <li>Adaptive forest management that is responsive to research, experience and public input</li> </ul>	24, 27, 35



## **6.0 Indicators and Indicator Matrices**

In an SFM Plan it is the indicators and targets that provide the performance measures that are to be met through on-the-ground forest management activities. This section provides a detailed description of each of the indicators and targets in the SFM Plan. Full compliance is required for most targets (i.e., there is no variance). Where full compliance may not be achievable, an acceptable level of variance is indicated for the target.

Licensees will monitor the achievement of targets annually on a calendar year basis. Management strategies and forecasting provide further direction to the performance measures (indicators and targets) and will serve as a guide in annual monitoring activities. The format individual licensees use to complete annual reporting is shown in Appendix 2.

### **Woodlots**

Woodlot operations within the TSA have an allocated harvest equal to approximately 1 percent of the annual harvest for the TSA. As discussed with the public advisory group, some of the performance measures may not be applicable to woodlots due to the limited scope of their operating area. For example, landscape level management utilizing old growth management areas would not be applicable to woodlots due to the small size of the operating area. If a woodlot operator wishes to seek registration to the CSA standard he/she would need to provide information on the appropriate applicability of the indicators in the Merritt TSA SFM Plan and develop an environmental management system and performance plan that addressed the relevant indicators.

### **Management Strategies**

Forest licensees are guided by the regulations, laws and policies established by the federal, provincial, and municipal governments. The direction set forth in legislation as well as additional policies provided by the district manager will guide strategies to manage forest operations and to provide high quality fiber for licensee operations over the long term. At the same time, licensees will make efforts to manage and balance the landscape for biological diversity, global cycles, soil, water and social responsibility.

The Merritt TSA Sustainable Forest Management Plan public participation process has helped to further refine the information and concerns of the local public. Incorporating these concerns and ideas into individual licensee operations through the established performance measures and ongoing monitoring will help to ensure long term sustainability of the forest resource. Any indicators established in this Sustainable Forest Management Plan that are conducive to long term projections are as noted below.

Section 4.3 describes the plans, policies and management strategies that support the achievement of the targets in the SFM Plan.

## **Forecasting**

Predicting the results of forest management indicators for the Defined Forest Area is essential for determining the probable effectiveness of management alternatives. Forecasts are the long-term projection of expected future indicator levels. Forecasts for the indicators agreed upon by the public advisory group have already been incorporated into the SFM Plan targets as predicted results or outcomes for each target. The target for the indicator is in itself the predicted result or outcome. Generally, the target is being achieved for SFMP indicators. The forecast is that these targets will continue to be met. Indicator forecasts also provide predictions of future state relative to Elements, Values or Objectives.

### ***Provincial Forecasting Related to the SFM Plan***

A Provincial Level Timber Supply Analysis of regulatory requirements of the Forest Practices Code occurred in February, 1996. The analysis reviewed timber supply impacts of Code requirements related to: riparian management areas, biodiversity at the stand and landscape level, watershed assessment sensitivity, identified wildlife species at risk, soil conservation and visual quality management. Short term Provincial Timber Supply impacts are capped at 4.1% for biodiversity, 2.1% for riparian and 1% for Identified Wildlife Management Strategy.

The harvest level impact related to biodiversity and riparian management were based on analysis using the BC Forest Service Simulation Model (FSSIM) and impact assessments related to remaining Code requirements were based on professional estimates. Analysis was then completed at both the provincial and regional levels to determine the short term effects of the Forest Practices Code requirements. Forecasting of many of the SFM Plan Indicators and Targets has also occurred either directly or indirectly at the provincial or regional level.

### ***Regional Forecasting Related to the SFM Plan***

The Merritt Timber Supply Area Rationale for AAC Determination, January 1, 2002, included sensitivity analysis around integrated resource management objectives. The analysis was conducted using FSSIM, information about the timber harvesting landbase, timber volumes and management strategies to project a future state for a period of 400 years. Prior to the Chief Forester making his determination, the public was invited to review and comment on the Timber Supply Review (TSR). Further information on the opportunities for public input can be found in the TSR discussion paper and technical reports on Timber Supply Analysis and Socio-Economic Analysis. Further information pertaining to assumptions and analysis can be found within the determination for the Merritt TSA (January 1, 2002).

The Nicola Similkameen Innovative Forestry Society is undertaking several projects including ecosystem classification and fish stream inventories, to improve forest management information. As this information is developed it will support land use planning at the TSA level which in turn will provide a foundation for future forecasting. As access to the timber harvesting landbase is crucial to the long-term viability of the industry, biodiversity and landscape planning must utilize the latest information in making management decisions. The Nicola Similkameen Innovative Forestry Society has the opportunity to provide information for the TSA, which may

be used within a land use planning format to establish values or future forecasts. Forest related projects and activities of the NSIFS can be found on their website at: <http://www.nsifs.bc.ca/> .

Any indicators established in this Sustainable Forest Management Plan that are conducive to long term projections are as noted below.

### **Indicators**

Some indicators/targets are repeated for more than one element – even when indicators/targets are not repeated, this does not imply any limitation of their applicability to other elements. Although indicators may appear several times in the SFM Plan Matrix, they will be presented only once in this section.

The numbering sequence is consistent with the SFM matrix which is shown in Appendix 3<sup>3</sup>.

For certain indicators, some licensees will be required to estimate or prorate their performance results (e.g., reporting on the total output of forest products from sawmills for licensees who do not operate a sawmill in the Merritt TSA).

### ***Base Line for Indicators***

The primary source of base line information for indicators is the first monitoring report subsequent to adoption of the indicator. In some instances reporting on a full year is required to generate a meaningful result.

### ***Current Status of Indicators***

Current status of indicators is as shown in the previous year’s annual monitoring report and as such, is not included in the Plan. To obtain current information please refer to the most recent monitoring report on the web site

<http://www.for.gov.bc.ca/dcs/SustainableForestry/SustainableForestry.htm>

### **Legal Requirements**

Awareness of legal requirements is essential when considering suitable Objectives for an Element, and determining appropriate Indicators and Targets. In the following Indicator tables applicable Acts and Regulations are noted in the “Legal Requirements” section. Specific Sections/Subsections of these Acts and Regulations have not been identified to avoid having to manage the ongoing changes to forest legislation. Forest licensees ensure that specific legislation related to Objectives, Indicators and Targets is known and complied with by staying current with legal requirements. Subscribing to commercial services such as “Forest Views” or “Quickscribe” are examples of how licensees remain current.

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<sup>3</sup> The numbers do not necessarily conform with previous versions of the SFM Plan.

## Section 6.0 – Indicators and Indicator Matrices

<b>Indicator</b>	<b>2. Level of conformance to riparian management area commitments contained within licensee plans</b>
<b>Element(s)</b>	1.1 Ecosystem Diversity, 1.2 Species Diversity, 1.3 Genetic Diversity, 3.2 Water Quality and Quantity
<b>Strategy(s)</b> Description	<p>Indicator (2) forms part of the overall strategy to manage for biodiversity and water quality at the landscape and stand levels. Riparian management areas provide connectivity of forested cover along waterways, which are generally areas with high value for wildlife habitat and movement.</p> <p>Water is a primary and fundamental resource of the Merritt TSA. Numerous rivers, lakes and streams support many species of fish, such as rainbow trout, kokanee, burbot, mountain whitefish, eastern brook trout, bull trout and steelhead. Coho, chinook and pink salmon spawn in the Nicola River. Significant demands are also placed on water resources for domestic and agricultural purposes. There are currently 10 community watershed within the Merritt TSA.</p> <p>Strategies for aquatic and riparian ecosystems in the Merritt TSA are complemented by regulations in the Forest Practices Code. For example, management within riparian areas is outlined in the <i>Riparian Management Area Guidebook</i>. Additionally, the Cascades District has a policy for lakeshore management, including riparian habitat, the result of a three year planning process gathering information on over 300 lakes within the Merritt TSA.</p>
Means of achieving objective and target	All riparian management area commitments are included and highlighted in licensee plans.
<b>Forecast;</b> Initial Results or Outcome	<p>Base line for indicator (2001)</p> <p>No riparian infractions occurred during the harvest of 4,893 hectares of gross block area and right-of-ways.</p>
<b>Forecast;</b> Predicted Results or Outcome	<p>Ecosystems will support a diversity and abundance of native species and habitats.</p> <p>Riparian systems will maintain existing uses and support human and ecological communities and aquatic life.</p> <p>Operations will sustain long term water quality.</p>
<b>Target</b>	<p>100% conformance to riparian commitments involving known temperature sensitive streams and their direct tributaries made within licensee plans.</p> <p>100% conformance to other riparian commitments made within licensee plans.</p>
Basis for the Target	Riparian Management Area Guidebook, Cascades District has a policy for lakeshore management Legal requirements. Riparian area, and water management, are recognized by the public and by forest licensees as very important values and their careful management is a critical factor in achieving sustainability.
Legal Requirements	Forest Practices Code of British Columbia Act, Operational and Site Planning Regulation, Timber Harvesting and Silviculture Practices Regulation, Forest Road Regulation, Water Act, Fisheries Act, Transportation of Dangerous Goods Act, TDG Clear Language Regulations
<b>Monitoring &amp; Measurement</b> Periodic	
Annual	Licensees will report the number of riparian related non-conformances to licensee plans as compared to the number of riparian commitments in licensee plans occurring during the reporting year. Details will be provided for all non-conformances.
Variance (Indicators)	None

## Section 6.0 – Indicators and Indicator Matrices

<b>Indicator</b>	<b>3. Percent of harvested blocks greater than 5 hectares that have individual wildlife tree/stubs and/or associated wildlife tree patches.</b>
<b>Element(s)</b>	1.1 Ecosystem Diversity, 2.1 Forest Ecosystem Resilience, 2.2 Forest Ecosystem Productivity
<b>Strategy(s)</b> Description	<p>Maintenance of biodiversity is dependent in part upon management for important attributes at the stand (site) level.</p> <p>Indicator (3) focuses on management for biodiversity at the stand level. Note that wildlife tree patches may be located outside of cutblocks, along their edge, and still be consistent with provincial policy on wildlife tree retention.</p> <p>Maintaining structural diversity within cutblocks includes providing a diversity of tree species, maintaining understory vegetation, and retaining coarse woody debris on sites after logging.</p> <p>Strategies related to wildlife tree retention are consistent with the direction in the Landscape Unit Planning Guide with additional consideration for individual large diameter stems in NDT4. Direction from local government agencies through items such as <i>Douglas fir Management Guidelines</i> and <i>Wildlife Tree Patch Retention</i> policy provide guidance to implement biodiversity measures.</p>
Means of achieving objective and target	<p>During forest development planning, licensees plans incorporate a number of strategies for maintaining diversity of structure and function within cutblocks.</p> <p>Licensee plans, which are consistent with the <i>Douglas fir Management Guidelines</i> and <i>Wildlife Tree Patch Retention</i> policy, highlight all commitments.</p>
<b>Forecast;</b> Initial Results or Outcome	<p>Base line for indicator (2001)</p> <p>One hundred percent of harvested cutblocks greater than 5 hectares in size have individual wildlife tree/stubs and/or associated wildlife tree patches.</p>
<b>Forecast:</b> Predicted Results or Outcome	<p>Ecosystems will retain vertical structure and stand level attributes.</p> <p>Distributions of age classes as a result of Wildlife Tree retention are forecast as part of the Timber Supply Review.</p>
<b>Target</b>	90% of cutblocks have stand level biodiversity that will include individual wildlife tree/stubs and/or associated wildlife tree patches.
Basis for the Target	Douglas fir Management Guidelines and Wildlife Tree Patch Retention policy. Recommended best practice. Target designed to offer diversity in approach (varying size, location, presence of Wildlife Tree Patches or Wildlife Trees
Legal Requirements	Forest Practices Code of British Columbia Act, Operational and Site Planning Regulation, Timber Harvesting and Silviculture Practices Regulation, Strategic Planning Regulation, Workers Compensation Act
<b>Monitoring &amp; Measurement</b> Periodic	Distributions of age classes as a result of Wildlife Tree retention are forecast as part of the Timber Supply Review.
Annual	Licensees will report, for cutblocks greater than 5 hectares, the number of cutblocks harvested with wildlife tree patches within or parented to the cutblock and/or individual trees/stubs within the cutblock as compared to the total number of cutblocks greater than 5 hectares harvested during the reporting year.
Variance (Indicators)	None

## Section 6.0 – Indicators and Indicator Matrices

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<b>Indicator</b>	<b>4. Percent of First Nation commitments addressed.</b>
<b>Element(s)</b>	6.1 Aboriginal and Treaty Rights, 6.2 Respect for Aboriginal Forest Values, Knowledge, and Uses
<b>Strategy(s)</b> Description	Indicator 4 recognizes the importance of open communication and providing opportunities for meaningful participation of First Nations in forestry planning.  Open communications with First Nations during FDP reviews will include appropriate consideration of identified values.
Means of achieving objective and target	Licensees work proactively with First Nations to build mutually beneficial relationships.
<b>Forecast;</b> Initial Results or Outcome	Base line for priority indicator (2001)  Licensees achieved 39 of 39 Forest Development Plan commitments relating to First Nation requests.
<b>Forecast;</b> Predicted Results or Outcome	Forest operations will reflect the timber and non-timber interests of local First Nations.  As responsible stewards of public forest land, licensees work proactively with First Nations to build mutually beneficial relationships.
<b>Target</b>	Address all Forest Development Plan commitments made relating to First Nation requests (i.e., forest-related traditional knowledge, cultural and heritage values).  Under the Small Scale Salvage Program, ensure that First Nation referral comments or commitments requiring action are carried out by the licensee.
Basis for the Target	Responsive of communication, and reliable follow through on commitments, is essential to maintenance of effective relationships.
Legal Requirements	Forest Practices Code of British Columbia Act, Operational and Site Planning Regulation, Timber Harvesting and Silviculture Practices Regulation, Forest Road Regulation
<b>Monitoring &amp; Measurement</b> Periodic	
Annual	Licensees will report the number of First Nation commitments related to the Forest Development Plan that were achieved as compared to the total number of First Nations commitments made in the Forest Development Plan.  The Small Scale Salvage Program will report the number of First Nation referral comments or commitments achieved by the licensee compared to the total number of First Nations referral comments or commitments that required action.
Variance (Indicators)	None

## Section 6.0 – Indicators and Indicator Matrices

<b>Indicator</b>	<b>5. Percent of harvested areas that are regenerated with species ecologically suited to the site.</b>
<b>Element(s)</b>	1.2 Species Diversity, 2.1 Forest Ecosystem Resilience
<b>Strategy(s)</b> Description	Appropriate species selection will enable additional resistance to pests and increased tree growing performance. In terms of genetic diversity, Crown lands reforestation programs do not use genetically modified organisms and there are no genetically modified organisms registered for use on Crown lands. Registration is required for wild or seed orchard collected seedlots prior to reforestation on Crown lands. This registration responsibility lies with the Ministry of Forests and Range.  Vigorous stands will positively contribute to carbon storage
Means of achieving objective and target	Licensees' regeneration plans incorporate Provincial seed management protocols.
<b>Forecast;</b> Initial Results or Outcome	Base line for priority indicator (2001)  One hundred percent (133 of 133) blocks planted were regenerated with species ecologically suited to the site.
<b>Forecast;</b> Predicted Results or Outcome	Forests will be resistant to pests and have increased tree growing performance.  A diversity of native tree species will be represented in forests.  All naturally regenerated cutblocks will be seeded with seed ecologically suited to the site.  Appropriate species selection will enable additional resistance to pests and increased tree growing performance. In terms of genetic diversity, Crown lands reforestation programs do not use genetically modified organisms and there are no genetically modified organisms registered for use on Crown lands. Registration is required for wild or seed orchard collected seedlots prior to reforestation on Crown lands. This registration responsibility lies with the Ministry of Forests and Range.
<b>Target</b>	All harvested areas regenerated to species ecologically suited to site.
Basis for the Target	Legal requirements. Licensees are able to manage to this target with the variance provided.
Legal Requirements	Forest Practices Code of British Columbia Act, Timber Harvesting and Silviculture Practices Regulation, Strategic Planning Regulation
<b>Monitoring &amp; Measurement</b> Periodic	
Annual	All trees regenerated on harvested areas must comply with stocking standards specified in Licensee Plans, except in the case of the Small Scale Salvage Program, whereby stocking standards will be specified by the Ministry of Forests and Range. Licensees will : <ul style="list-style-type: none"> <li>• Generate a list of cutblocks or standard units that were declared free growing during the reporting period. This list will include a summary of field survey information showing tree species and percentage (Silviculture Label) at free growing.</li> <li>• Compare the list to the stocking standards specified in Licensee Plans for these harvested areas.</li> <li>• Report the number of harvested areas which were declared free growing and regenerated in compliance with stocking standards during the reporting period, as compared to the total number of areas declared free growing during the reporting period.</li> </ul>
Variance (Indicators)	Variance is provided for within the legal framework

## Section 6.0 – Indicators and Indicator Matrices

<b>Indicator</b>	<b>6. Degree of protection given to Identified Wildlife.</b>
<b>Element(s)</b>	1.2 Species Diversity, 1.3 Genetic Diversity
<b>Strategy(s)</b> Description	<p>Maintenance of biodiversity is dependent in part upon protection of rare and endangered species.</p> <p>The Merritt TSA has a great diversity of wildlife including several species that are considered rare at the provincial level. A key management requirement for sustaining wildlife populations is the protection, maintenance and enhancement of wildlife habitat. To address the needs of wildlife habitat, resource managers have recently begun to adopt an ecosystem approach that addresses the needs of many species at a landscape level. However, in following this approach, the habitat needs of certain key species may not be addressed and additional specific actions may be required to deal with these needs.</p> <p>The Identified Wildlife Management Strategy (IWMS) provides some management direction for rare species, however, it does not address all rare species in the plan area and only addresses site level features (e.g., den or nest sites).</p>
Means of achieving objective and target	<p>The Forest Practices Code outlines a process for identifying rare features and species at risk which require special management. Currently, 19 species identified as at risk may be found in the Merritt TSA.</p> <p>Licensees work with Government agencies to incorporate appropriate measures in licensee plans when species at risk are identified or are known to occur in the vicinity of areas planned for logging or road building.</p>
<b>Forecast;</b> Initial Results or Outcome	<p>Base line for priority indicator (2001)</p> <p>All 15 cutblocks harvested that were influenced by the IWMS followed appropriate general wildlife measures.</p>
<b>Forecast;</b> Predicted Results or Outcome	<p>“Rare” attributes will be maintained in a diversity of ecosystems.</p> <p>Ecosystems will support a diversity and abundance of native species and habitats.</p>
<b>Target</b>	100% conformance to plan commitments designed to protect Identified Wildlife species or habitat.
Basis for the Target	<p>Identified Wildlife Management Strategy</p> <p>Intentionally worded to avoid limiting the focus to general wildlife measures for established Wildlife Habitat Areas (WHAs)</p>
Legal Requirements	Forest Practices Code of British Columbia Act, Operational and Site Planning Regulation, Wildlife Act, Species At Risk Act
<b>Monitoring &amp; Measurement</b> Periodic	
Annual	<p>Licensees will report the area harvested where licensee plans contained commitments to protect Identified Wildlife and the area harvested where operations conformed to the plan to protect Identified Wildlife.</p> <p>Licensees will provide a list of IWMS species managed.</p>
Variance (Indicators)	None

## Section 6.0 – Indicators and Indicator Matrices

<b>Indicator</b>	<b>7. Percent of harvested cutblocks within the mule deer winter range that are managed consistent with the Merritt TSA Mule Deer Strategy.</b>
<b>Element(s)</b>	1.2 Species Diversity, 1.4 Protected Areas and Sites of Special Biological Significance
<b>Strategy(s)</b> Description	The Merritt TSA has a great diversity of wildlife including several species that are considered rare at the provincial level. A key management requirement for sustaining wildlife populations is the protection, maintenance and enhancement of wildlife habitat. To address the needs of wildlife habitat, resource managers have recently begun to adopt an ecosystem approach that addresses the needs of many species at a landscape level. However, in following this approach, the habitat needs of certain key species may not be addressed and additional specific actions may be required to deal with these needs (e.g., <i>Ungulate Winter Range Strategy for the Merritt TSA</i> ).
Means of achieving objective and target	Utilize local knowledge, actual on the ground indicators and strategy mapping to enable data consolidation Using available information, licensees develop plans aligned to Government direction.
<b>Forecast:</b> Initial Results or Outcome	Base line for priority indicator (2001) One hundred percent of cutblocks within the mule deer winter range were managed consistent with the Merritt TSA Mule Deer Strategy.
<b>Forecast:</b> Predicted Results or Outcome	Ecosystems will support a diversity and abundance of naturally occurring wildlife and their habitats. The timber supply impact of managing for Mule Deer winter range is forecast as part of the Timber Supply Review
<b>Target</b>	All cutblocks within the mule deer winter range managed consistent with government policy.
Basis for the Target	Ungulate Winter Range Strategy for the Merritt TSA. Reflects current performance level and is public expectation.
Legal Requirements	Forest Practices Code of British Columbia Act, Operational and Site Planning Regulation, Timber Harvesting and Silviculture Practices Regulation, Forest Road Regulation, Wildlife Act
<b>Monitoring &amp; Measurement</b> Periodic	The timber supply impact of managing for Mule Deer winter range is forecast as part of the Timber Supply Review
Annual	Utilize local knowledge, actual on the ground indicators and strategy mapping to enable data consolidation. Licensees will report: <ul style="list-style-type: none"> <li>• the number of cutblocks harvested that were managed consistent with the mule deer winter range strategy as compared to the total number of cutblocks harvested that were within the mule deer winter range area.</li> </ul>
Variance (Indicators)	As provided for within strategy and within legal framework

## Section 6.0 – Indicators and Indicator Matrices

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<b>Indicator</b>	<b>8. Percent of areas revegetated with grass seed that is “graded acceptable”.</b>
<b>Element(s)</b>	1.3 Genetic Diversity
<b>Strategy(s)</b> Description	High levels of germination and quality seed during revegetation will provide less of an opportunity for noxious weed establishment. Effective grass seeding also reduces soil erosion and sedimentation.
Means of achieving objective and target	Licenseses prescribe and use grass mixes which are appropriate for elevation and aspect.
<b>Forecast; Initial Results or Outcome</b>	Base line for priority indicator (2001)  One hundred percent of areas requiring revegetation were revegetated with grass seed graded "acceptable" (total of 18,341 kg of seed applied).
<b>Forecast; Predicted Results or Outcome</b>	High levels of germination and quality seed during revegetation will provide less of an opportunity for noxious weed establishment. Effective grass seeding will reduce soil erosion and sedimentation.  Grass seed utilized for revegetation will be ecologically matched to local growing climate.  Licenseses will use grass mixes which are appropriate for elevation and aspect.
<b>Target</b>	All areas revegetated for the control of noxious weeds and erosion will use Canada #1 or equivalent grass seed.
Basis for the Target	Acceptable seed grades have verified levels of grass species percentages and weed contamination.
Legal Requirements	NA
<b>Monitoring &amp; Measurement</b> Periodic	
Annual	Licenseses will report the volume of Canada #1 seed that was applied and the volume of total seed applied (kilograms) for the reporting period. Licenseses will calculate the percentage of seed applied during the reporting period that was Canada #1.
Variance (Indicators)	None

## Section 6.0 – Indicators and Indicator Matrices

<b>Indicator</b>	<b>9. Percent of harvest priorities, related to catastrophic forest health events (e.g. mountain pine beetle), completed prior to critical time frame.</b>
<b>Element(s)</b>	2.1 Forest Ecosystem Resilience, 4.1 Carbon Uptake and Storage-
<b>Strategy(s)</b> Description	<p>Forest health management is a means of influencing stand condition, volume and value over the short and long term. Forest health management practices also potentially influence biodiversity, ecosystem productivity and the quantity and quality of other resource values.</p> <p>Forest Health is responsible for the detection and quantification of forest health problems, and, where necessary, the prescription and implementation of protective or suppressive treatments to anticipate and prevent insect, disease and mammal damage to reforested areas and old growth stands.</p> <p>British Columbia's forests are home to and are occasionally damaged by many insects, diseases and mammals. Annual losses in volume and growth are equivalent to approximately 25% of the annual allowable timber harvest (regulated lands only) per year. (As a comparison, forest fires claim less than the equivalent of 2% of British Columbia's annual allowable harvest.)</p>
Means of achieving objective and target	<p>The Forest District requires that each licensee prepare a beetle management plan which becomes an integral part of the FDP. This plan identifies a licensee's priorities and commitments for the year.</p> <p>Licensees proceed with harvest approval and logging per the approved plan.</p>
<b>Forecast;</b> Initial Results or Outcome	<p>Base line for priority indicator (2001)</p> <p>Eighty-seven percent of harvest priorities related to catastrophic forest health events were completed prior to critical time frame.</p> <p>The catastrophic forest health agent was mountain pine beetle.</p>
<b>Forecast;</b> Predicted Results or Outcome	Logical priorities will be established and communicated to aid in control of forest health issues.
<b>Target</b>	100% of harvest area committed for harvest prior to critical time frame will be harvested.
Basis for the Target	Harvesting is one of the management tools used in response to some certain catastrophic forest health events. Timely, effective harvesting reduces both the rate of spread, and loss of timber value, of several forest health pests.
Legal Requirements	Forest Practices Code of British Columbia Act, Operational and Site Planning Regulation
<b>Monitoring &amp; Measurement</b> Periodic	
Annual	<p>Harvest priorities will be established internally and consistent with the District forest health strategy. These priorities are monitored and revised as new information is made available. Licensees will report the:</p> <ul style="list-style-type: none"> <li>• Number of hectares committed to harvest by critical time frame.</li> <li>• Number of hectares harvested within critical time frame.</li> </ul> <p>The licensees will report this figure by catastrophic forest health agent (e.g. mountain pine beetle).</p>
Variance (Indicators)	20%

## Section 6.0 – Indicators and Indicator Matrices

<b>Indicator</b>	<b>10. Percentage of cutblock area that meets free growing requirements on or before the latest date.</b>
<b>Element(s)</b>	2.2 Forest Ecosystem Productivity, 4.1 Carbon Uptake and Storage
<b>Strategy(s)</b> Description	Achievement of the earliest free growing date will help ensure that the productive capacity of the forest landbase to grow trees is maintained. Vigorous stands will positively contribute to carbon storage
Means of achieving objective and target	Licensee plans focus on prompt reforestation.
<b>Forecast; Initial Results or Outcome</b>	Base line for priority indicator (2001) Ninety-nine percent (3,981 hectares of 4,020 hectares) of harvested areas met free growing requirements on or before the latest date. This is less that the desired target of 100 percent.
<b>Forecast; Predicted Results or Outcome</b>	The established free growing targets will ensure that the productive capacity of the forest landbase to grow trees is maintained. The Ministry of Forests and Range is responsible for providing guidelines on key dates such as free growing, based on specific biogeoclimatic information for each site.
<b>Target</b>	All cutblocks will reach free growing requirements on or before the latest date.
Basis for the Target	Legal requirements. Sustainability (vigor, site productivity) enhanced. Reflects current performance level and is public expectation.
Legal Requirements	Forest Practices Code of British Columbia Act, Operational and Site Planning Regulation, Timber Harvesting and Silviculture Practices Regulation
<b>Monitoring &amp; Measurement</b> Periodic	
Annual	Licensees will report the area of cutblocks that achieved free-growing status (prior to or at late free-growing date) as compared to the total hectares declared free-growing status prior to, at or beyond late free-growing date (during the reporting year).
Variance (Indicators)	None

## Section 6.0 – Indicators and Indicator Matrices

<b>Indicator</b>	<b>11. Area of cutblocks that outperformed late free growing requirements in that year.</b>
<b>Element(s)</b>	4.1 Carbon Uptake and Storage
<b>Strategy(s)</b> Description	Achievement of the earliest free growing date will help ensure that the productive capacity of the forest landbase to grow trees is maintained.  Providing crop trees with a head start against competing vegetation will help to reduce the need for manual or chemical brushing treatments.  Vigorous stands will positively contribute to carbon storage
Means of achieving objective and target	Licensee plans focus on prompt reforestation.
<b>Forecast; Initial Results or Outcome</b>	Base line for priority indicator (2001)  There were 3,959.6 hectares where free growing obligations were met in advance of the legislated late free growing date.  The average time by which requirements were exceeded was 6.5 years.
<b>Forecast; Predicted Results or Outcome</b>	Achievement of the earliest free growing date will help ensure that the productive capacity of the forest landbase to grow trees is maintained.  Providing crop trees with a head start against competing vegetation will help to reduce the need for manual or chemical brushing treatments.  The Ministry of Forests and Range is responsible for providing guidelines on key dates such as free growing, based on specific biogeoclimatic information for each site.
<b>Target</b>	Report area of cutblocks that outperformed late free growing requirements and average time by which requirements exceeded.
Basis for the Target	Sustainability (vigor, site productivity) enhanced.
Legal Requirements	Forest Practices Code of British Columbia Act, Operational and Site Planning Regulation, Timber Harvesting and Silviculture Practices Regulation
<b>Monitoring &amp; Measurement</b> Periodic	
Annual	Licensees will report the cutblock area (ha) which achieved free growing status and the average time (years) that the cutblock outperformed late free growing date (weighted average based on cutblock area).
Variance (Indicators)	None

## Section 6.0 – Indicators and Indicator Matrices

<b>Indicator</b>	<b>12. Annual percent of cutblock areas in permanent access structures (e.g. roads, landings).</b>
<b>Element(s)</b>	3.1 Soil Quality and Quantity, 4.2 Forest Land Conversion
<b>Strategy(s)</b> Description	Access structures such as roads and landings compact soil, making regeneration difficult, and disrupt the natural connectivity within forest stands. The percent target refers specifically to loss to the timber harvesting landbase due to access structures within harvested areas.
Means of achieving objective and target	Licensee plans are designed to minimize permanent access structures through careful planning, and rehabilitation where practical.
<b>Forecast;</b> Initial Results or Outcome	Base line for priority indicator (2001) The percentage area of harvested roads and landings within the total harvested area averaged 4.7 percent.
<b>Forecast;</b> Predicted Results or Outcome	Forest soils will remain productive and losses to forest development will be minimized. Permanent access structures (percent non-productive unnatural) are utilized in Provincial Timber Supply Review.
<b>Target</b>	Less than 7% on average of cutblock areas in permanent access structures.
Basis for the Target	Legal requirements. Maintenance of site productivity is a core prerequisite for achieving sustainability.
Legal Requirements	Forest Practices Code of British Columbia Act, Operational and Site Planning Regulation, Timber Harvesting and Silviculture Practices Regulation, Forest Road Regulation
<b>Monitoring &amp; Measurement</b> Periodic	Permanent access structures (percent non-productive unnatural) are utilized in Provincial Timber Supply Review.
Annual	Information from Licensee plans will be utilized unless an internal or Ministry of Forests and Range inspection reports the plan number has been exceeded, in which case the actual number will be used in report. Licensees will report the: <ul style="list-style-type: none"> <li>● cutblock area (ha) of permanent roads and landings identified in licensee plans as compared to the gross block area (ha) for cutblocks harvested during the reporting year.</li> </ul>
Variance (Indicators)	None

## Section 6.0 – Indicators and Indicator Matrices

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<b>Indicator</b>	<b>13. Level of conformance to soil conservation commitments contained within licensee plans.</b>
<b>Element(s)</b>	3.1 Soil Quality and Quantity
<b>Strategy(s)</b> Description	Soil conservation standards help to ensure that Forest soils remain productive and losses to forest development are minimized.
Means of achieving objective and target	Licensee plans document the sensitivity of soils on site to disturbance. Operations use this information to determine methods and timing of operations.
<b>Forecast;</b> Initial Results or Outcome	Base line for priority indicator (2001) No soil disturbance infractions were issued on the 4,009 hectares where harvesting occurred.
<b>Forecast;</b> Predicted Results or Outcome	Forest soils will remain productive and losses to forest development will be minimized. <i>This target reflects the Forest Practices Code – Soil Conservation Guidebook standards. Timber Supply impacts of this FPC requirement were analyzed in the Forest Practices Code Analysis Report - 1996.</i>
<b>Target</b>	100% conformance to soil conservation measures contained within licensee plans.
Basis for the Target	Soil Conservation Guidebook. Legal requirements. Maintenance of site productivity is a core prerequisite for achieving sustainability.
Legal Requirements	Forest Practices Code of British Columbia Act, Operational and Site Planning Regulation, Timber Harvesting and Silviculture Practices Regulation, Forest Road Regulation
<b>Monitoring &amp; Measurement</b> Periodic	
Annual	Licensees will report the area (hectares) where soil disturbance commitments were not achieved as compared to the total gross area harvested during the reporting year.
Variance (Indicators)	None

## Section 6.0 – Indicators and Indicator Matrices

<b>Indicator</b>	<b>14. Number of operationally caused slides occurring as a result of failure to perform a terrain assessment or to follow the recommendations within a completed assessment.</b>
<b>Element(s)</b>	3.1 Soil Quality and Quantity
<b>Strategy(s)</b> Description	Steep slopes and terrain conditions in the entire Merritt TSA have the potential to contribute to landslides and surface soil erosion. Landslides are a natural and inevitable phenomenon that contributes to the evolution of the landscape. Although landslides occur in both logged and unlogged terrain, logging and road building can increase their frequency. Impacts of landslides include acceleration of sediment delivery to streams, possible damage to fish and invertebrate habitat and productivity, loss of forest site productivity, unsightly scars and damage to roads, culverts and bridges. The Forest Practices Code has comprehensive steps to aid in the identification and mitigation of industry caused landslides. Since the FPC inception in 1995 all development of roads and cutblocks is consistent with the tools established in the legislative framework.
Means of achieving objective and target	The following are examples of the process undertaken to minimize landslides:  Assess all Class IV and V terrain prior to road construction or harvesting to evaluate terrain stability and provide recommendations on: <ul style="list-style-type: none"> <li>▪ whether or not development should proceed</li> <li>▪ best road and cutting boundary locations or changes to proposed layout or road alignment</li> <li>▪ riparian management areas</li> <li>▪ possible mitigative actions and criteria</li> <li>▪ road construction and harvesting constraints or special techniques.</li> </ul> Inspections of drainage ditches and culverts regularly and take preventative measures to minimize the potential for debris flow initiation and soil erosion.
<b>Forecast; Initial Results or Outcome</b>	Base line for priority indicator (2001)  No slides occurred as a result of FPC contraventions.
<b>Forecast; Predicted Results or Outcome</b>	The exposure of forest soil from slides will be decreased thus reducing the potential for sedimentation and ensuring the maintenance of water quality and forest site productivity.
<b>Target</b>	Zero slides.
Basis for the Target	Landslides are a significant environmental disturbance. Reducing the risk of landslides resulting from forest operations is a priority.  Guidelines were developed in 1995 therefore, the SFM plan indicator/target refers to occurrences after 1995.
Legal Requirements	Forest Practices Code of British Columbia Act, Operational and Site Planning Regulation, Timber Harvesting and Silviculture Practices Regulation, Forest Road Regulation
<b>Monitoring &amp; Measurement</b> Periodic	
Annual	Licensees will report the number and associated area of operationally caused slides resulting from a failure to perform a terrain assessment or to follow the recommendations within a completed assessment.
Variance (Indicators)	None

*Section 6.0 – Indicators and Indicator Matrices*

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<b>Indicator</b>	<b>15. Percent of watershed that is equivalent clear cut area (ECA).</b>
<b>Element(s)</b>	3.2 Water Quality and Quantity
<b>Strategy(s)</b> Description	This indicator is intended to focus more planning and assessment in watersheds with a significant history of logging and road construction, prior to implementing additional operations. Water quality, quantity and timing are influenced to varying degrees by road construction and harvesting. As the level of recent disturbance (measured as ECA) increases, the more likely there is to be a negative influence.
Means of achieving objective and target	Licenseses, in consultation with Government Agencies, carry out necessary hydrological assessments prior to implementing operations. Any forest management recommendations developed as part of the hydrological assessment are referenced in Licensee plans.
<b>Forecast;</b> Initial Results or Outcome	Base line for priority indicator (2001) 2003 Monitoring Report: Indicator significantly revised in 2003 and has a new Target
<b>Forecast;</b> Predicted Results or Outcome	Ecosystems will support a diversity and abundance of native species and habitats. Riparian systems will maintain existing uses and support human and ecological communities and aquatic life.
<b>Target</b>	Equivalent clear cut area (ECA) not to exceed 35% without doing further hydrological assessments prior to harvesting.
Basis for the Target	Expert opinion that adverse affects from harvesting/road construction typically become apparent around the 30% level. Ensures focused assessment of watershed conditions prior to additional operations in watersheds with an ECA at the “warning flag” level. Legal requirements only in community watersheds or where District Manager specifically requests an assessment.
Legal Requirements	Forest Practices Code of British Columbia Act, Operational and Site Planning Regulation
<b>Monitoring &amp; Measurement</b> Periodic	
Annual	Licenseses will report on the number of cutblocks harvested where the watershed ECA exceeded 35% and no further hydrological assessments were completed compared to the total number of cutblocks harvested where the watershed ECA exceeded 35%.
Variance (Indicators)	5%

## Section 6.0 – Indicators and Indicator Matrices

<b>Indicator</b>	<b>16. Percent of permanent status roads that have inspections and related maintenance completed as per programs.</b>
<b>Element(s)</b>	3.2 Water Quality and Quantity, 5.3 Fair Distribution of Benefits and Costs
<b>Strategy(s)</b> Description	Indicator (16) recognizes the potential impact of roaded access on forests and waterways. Certain soil types are sensitive to disturbance from road construction. The soil and water information collected during the planning phase and future expected use of the road are used to determine the type of road constructed and level of maintenance, deactivation or rehabilitation to be prescribed. Licensees are responsible for inspection of roads based on a risk frequency.
Means of achieving objective and target	Roads are inspected according to the risk based schedule. Actual or potential problems identified are scheduled for maintenance based on priority.
<b>Forecast; Initial Results or Outcome</b>	Base line for priority indicator (2001) Road data systems indicated that 76 percent of permanent status roads had inspections and related maintenance completed as scheduled (672 of 885). Licensees noted issues with their data management systems which included roads planned and not yet built and roads which had been permanently deactivated or rehabilitated. There were a total of 807 maintenance action items requiring completion during the year. All the high and medium priority items were completed. Some of the lower priority items were deferred to coincide with other planned operations occurring in the same vicinity.
<b>Forecast; Predicted Results or Outcome</b>	Water quality and soil productivity will be maintained through active road maintenance and deactivation programs to prevent soil movement and sedimentation – particularly during the spring snow melt.
<b>Target</b>	All permanent status roads and associated structures will have inspections and related maintenance completed as scheduled.
Basis for the Target	Legal requirements. Recognition that roads have the largest potential environmental aspect of all forestry operations. Also recognizes risk management.
Legal Requirements	Forest Practices Code of British Columbia Act, Forest Road Regulation
<b>Monitoring &amp; Measurement</b> Periodic	
Annual	Road inspection frequency is based on risk (i.e. community watershed, fish stream presence and level of deactivation, previous history). Licensees will report the: <ul style="list-style-type: none"> <li>• Number of road inspections completed as compared to the number of inspections established in road maintenance programs during the reporting year.</li> <li>• Number of maintenance action items related to water management and soil movement that were completed as compared to the total number of maintenance action items that required completion during the reporting year.</li> </ul>
Variance (Indicators)	None

## Section 6.0 – Indicators and Indicator Matrices

<b>Indicator</b>	<b>17. Percent of area prescribed for planting that is completed before or during the third growing season.</b>  <b>Percent of natural regeneration area meeting natural regeneration delay.</b>
<b>Element(s)</b>	4.2 Forest Land Conversion
<b>Strategy(s)</b>  Description	Prompt reforestation will ensure that the productive capacity of forest landbase to grow trees is maintained.  Promptness will also aid in providing younger trees a head start against competing vegetation, helping to reduce the need for manual or chemical brushing treatments.  Vigorous stands will positively contribute to carbon storage
Means of achieving objective and target	Licensee plans focus on prompt reforestation.
<b>Forecast;</b> Initial Results or Outcome	Base line for priority indicator (2001)  Ninety-seven percent of areas (1,951 of 2,007 hectares) prescribed for planting were completed within the third growing season from start date of harvest.  One hundred percent of areas prescribed for natural regeneration and having a regeneration expiry date that fell within the reporting period (1,576 hectares) were successfully regenerated.
<b>Forecast;</b> Predicted Results or Outcome	Prompt reforestation will ensure that the productive capacity of forest landbase to grow trees is maintained.  Promptness will also aid in providing younger trees a head start against competing vegetation, helping to reduce the need for manual or chemical brushing treatments.
<b>Target</b>	90 percent of area prescribed for planting is completed within the third growing season from start date of harvest.  All natural regeneration area meeting natural regeneration delay.
Basis for the Target	Legal requirements for natural regeneration. Sustainability (vigor, site productivity) enhanced. Reflects current performance level.
Legal Requirements	Forest Practices Code of British Columbia Act, Operational and Site Planning Regulation, Timber Harvesting and Silviculture Practices Regulation
<b>Monitoring &amp; Measurement</b>  Periodic	
Annual	Utilize information for initial prescribed planting not for fill planting. Licensees will report: <ul style="list-style-type: none"> <li>• The area planted prior or within the third growing season as compared to the total area planted during the reporting year.</li> <li>• The area naturally regenerated which achieved regeneration delay as compared to the total area where regeneration delay expired during the reporting year.</li> </ul>
Variance (Indicators)	+/-10 %  None

## Section 6.0 – Indicators and Indicator Matrices

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<b>Indicator</b>	<b>18. Annual harvest level as a percent of annual allocation.</b>
<b>Element(s)</b>	4.2 Forest Land Conversion, 5.2 Communities and Sustainability
<b>Strategy(s)</b> Description	The Chief Forester determines the sustainable harvest level for the TSA after considering social, economic and biological criteria. Licensees contribute to the sustainable harvest level by adhering to their apportioned harvest volume within the TSA. Cut control regulations dictate the short-term harvest flexibility.
Means of achieving objective and target	Licensees schedule harvesting within the variance provided.
<b>Forecast;</b> Initial Results or Outcome	All licensees were within the cut control variance set out by regulation. The volume harvested in 2001 was 1,258,535 cubic meters.
<b>Forecast;</b> Predicted Results or Outcome	Base line for priority indicator (2001)  Short and long term harvest flows will reflect forest conditions, forest practices and the socio-economic objectives of the Crown.  A timber supply review <sup>4</sup> for the TSA was completed in 2001 with the Allowable Cut Determination effective January 1st, 2002. The next review is scheduled for completion in 2006.
<b>Target</b>	Full compliance with cut control and annual reporting of harvest level and allocation.
Basis for the Target	Legal requirements
Legal Requirements	Forest Act, Cut Control Regulation
<b>Monitoring &amp; Measurement</b> Periodic	A timber supply review <sup>5</sup> for the TSA was last completed in -2001. Reviews are scheduled on a periodic bases with an objective of every 5 years.
Annual	Licensees will report the harvest level allocated for each license and harvest level cut (cut control volume) for the past reporting year.
Variance (Indicators)	According to Cut control regulation or government policy.

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<sup>4</sup> The Timber Supply Review has detailed forecasts which rely on the Chief Forester to provide a determination of harvest levels utilizing forecast information, Crown objectives and input from public

<sup>5</sup> The Timber Supply Review has detailed forecasts which rely on the Chief Forester to provide a determination of harvest levels utilizing forecast information, Crown objectives and input from public

## Section 6.0 – Indicators and Indicator Matrices

<b>Indicator</b>	<b>19. Total output of forest products (lumber, chips and other) from sawmills within the TSA.</b>
<b>Element(s)</b>	5.3 Fair Distribution of Benefits and Costs
<b>Strategy(s)</b> Description	<p>The forest industry in the Merritt TSA area plays an important role in the regional and provincial economies and has the fifteenth largest allowable annual cut (AAC) of the 36 TSAs in the province. Within the Merritt Timber Supply Area (TSA) approximately 20 percent of the productive Crown forest is not considered available for timber harvesting and will provide for environmental values. Of the 1.13 million hectares, approximately 600,000 hectares are considered within the Crown forest landbase and available for harvesting of timber.</p> <p>Key land and resource issues for the forest industry in the plan area include security of timber supply and increased costs associated with managing other resource values (e.g., forage for livestock, wildlife habitat, visual quality, etc.). Cost increases are a major concern to the forest industry as they may affect its international competitiveness.</p> <p>As stated in the socio-economic profile in the <i>Merritt Timber Supply Review Public Discussion Paper</i>, the economic benefit to the regional economy from forestry in the private-sector is a major contributor. Forestry is the largest private-sector employer at 24 percent which reflects direct, indirect and induced employment. The potential contribution of the Merritt TSA timber harvest utilizing the current 1.4 million cubic meter annual harvest level equates to approximately 51 million dollars in annual stumpage to provincial revenue and approximately 43 million dollar in total annual employment income for the Merritt region.</p> <p>The purpose of this Indicator is to determine if industry is sustainable over time. Currently gathering baseline data through annual reporting.</p>
Means of achieving objective and target	Each licensee assembles required information as part of the annual reporting.
<b>Forecast; Initial Results or Outcome</b>	<p>Base line for priority indicator (2001)</p> <p>The total lumber output from sawmills within the TSA was 272,031 million board feet.</p> <p>The total chip, shavings and hog fuel output from sawmills within the TSA was 195,315 bone dry units.</p> <p>The total of other forest products output from sawmills within the TSA was 25,891 cubic meters.</p>
<b>Forecast; Predicted Results or Outcome</b>	Forests resources will sustain a prosperous forest-based economy.
<b>Target</b>	Report the board feet and chip volume produced by sawmills within the TSA.
Basis for the Target	Key economic statistics monitored.
Legal Requirements	Forest Act
<b>Monitoring &amp; Measurement</b> Periodic	
Annual	Licensees will report the total output of lumber (thousand board feet), chips, shavings and hog fuel (bone dry units) from sawmills within the TSA. For other lumber products report the total output (m <sup>3</sup> ) (e.g. posts).
Variance (Indicators)	None

## Section 6.0 – Indicators and Indicator Matrices

<b>Indicator</b>	<b>20. Operating level of timber processing facilities.</b>
<b>Element(s)</b>	5.2 Communities and Sustainability, 5.3 Fair Distribution of Benefits and Costs
<b>Strategy(s)</b> Description	<p>The forest industry in the Merritt TSA area plays an important role in the regional and provincial economies. Within the Merritt Timber Supply Area (TSA) approximately 20 percent of the productive Crown forest is not considered available for timber harvesting and will provide for environmental values. Of the 1.13 million hectares, approximately 600,000 hectares are considered within the Crown forest landbase and available for harvesting of timber.</p> <p>Key land and resource issues for the forest industry in the plan area include security of timber supply and increased costs associated with managing other resource values (e.g., forage for livestock, wildlife habitat, visual quality, etc.). Cost increases are a major concern to the forest industry as they may affect its international competitiveness.</p> <p>As stated in the socio-economic profile in the <i>Merritt Timber Supply Review Public Discussion Paper</i>, the economic benefit to the regional economy from forestry in the private-sector is a major contributor. Forestry is the largest private-sector employer at 24 percent which reflects direct, indirect and induced employment. The potential contribution of the Merritt TSA timber harvest utilizing the current 1.4 million cubic meter annual harvest level equates to approximately 51 million dollars in annual stumpage to provincial revenue and approximately 43 million dollar in total annual employment income for the Merritt region.</p> <p>The purpose of this Indicator is to determine if industry is sustainable over time. Currently gathering baseline data through annual reporting.</p>
Means of achieving objective and target	Each licensee assembles required information as part of the annual reporting.
<b>Forecast; Initial Results or Outcome</b>	Base line for priority indicator (2001) The timber processing facilities within the TSA were in operation 487days during the reporting period.
<b>Forecast; Predicted Results or Outcome</b>	Forests resources will sustain a prosperous forest-based economy.
<b>Target</b>	Report number of timber processing facility operating days, the average number of shifts for days the mill was in production and the number of mill employees on payroll.
Basis for the Target	Key economic statistics monitored.
Legal Requirements	Forest Act
<b>Monitoring &amp; Measurement</b> Periodic	
Annual	<p>Licensees will report:</p> <ul style="list-style-type: none"> <li>• the number of timber processing facility operating days in the year</li> <li>• the average number of shifts for days the mill was in production</li> <li>• the number of mill employees on payroll..</li> </ul>
Variance (Indicators)	None

## Section 6.0 – Indicators and Indicator Matrices

<b>Indicator</b>	<b>21. Conformance with plan commitments related to lakeshore guidelines.</b>
<b>Element(s)</b>	5.1 Timber and Non-Timber Benefits
<b>Strategy(s)</b> Description	<p>Indicator (2) forms part of the overall strategy to manage for biodiversity and water quality at the landscape and stand levels. Riparian management areas provide connectivity of forested cover along waterways, which are generally areas with high value for wildlife habitat and movement.</p> <p>Water is a primary and fundamental resource of the Merritt TSA. Numerous rivers, lakes and streams support many species of fish, such as rainbow trout, kokanee, burbot, mountain whitefish, eastern brook trout, bull trout and steelhead. Coho, chinook and pink salmon spawn in the Nicola River. Significant demands are also placed on water resources for domestic and agricultural purposes. There are currently 10 community watershed within the Merritt TSA.</p> <p>Strategies for aquatic and riparian ecosystems in the Merritt TSA are complemented by regulations in the Forest Practices Code. For example, management within riparian areas is outlined in the <i>Riparian Management Area Guidebook</i>. Additionally, the Merritt District has a policy for lakeshore management, including riparian habitat, which included a three year planning process gathering information on over 300 lakes within the Merritt TSA.</p> <p>Lakes and lakeshore environments provide significantly higher cultural and recreational values and opportunities than the general land base.</p>
Means of achieving objective and target	Licensee plans incorporate and highlight measures taken to achieve lakeshore guidelines
<b>Forecast; Initial Results or Outcome</b>	<p>Base line for priority indicator (2001)</p> <p>Licensees fully complied with operational plan commitments relating to lakeshore guidelines (8 cutblocks).</p>
<b>Forecast; Predicted Results or Outcome</b>	<p>Ecosystems will support a diversity and abundance of native species and habitats.</p> <p>Riparian systems will maintain existing uses and support human and ecological communities and aquatic life.</p> <p>The timber supply impact of managing to the Lakeshore Guidelines is forecast as part of the Timber Supply Review</p> <p>Recreation values will be sustained.</p>
<b>Target</b>	100% conformance to plan commitments related to lakeshore guidelines.
Basis for the Target	Riparian Management Area Guidebook, Merritt District policy for lakeshore management. Legal requirements. A relatively small proportion of the landbase with high values. Focus on and achieve superior results in such areas.
Legal Requirements	Forest Practices Code of British Columbia Act, Operational and Site Planning Regulation, Timber Harvesting and Silviculture Practices Regulation, Forest Road Regulation, Water Act
<b>Monitoring &amp; Measurement</b> Periodic	The timber supply impact of managing to the Lakeshore Guidelines is forecast as part of the Timber Supply Review
Annual	Licensees will report the area harvested where licensee plans contained commitments to manage lakeshore and the area harvested where operations conformed to the licensee plans to manage lakeshore.
Variance (Indicators)	None

## Section 6.0 – Indicators and Indicator Matrices

<b>Indicator</b>	<b>22. Percent of cutblocks in known scenic areas with visual impact assessments completed.</b>
<b>Element(s)</b>	5.1 Timber and Non-Timber Benefits
<b>Strategy(s)</b> Description	<p>Visual landscape inventories are carried out to delineate, classify, and record areas in the province that are considered "visually sensitive." District managers identify scenic areas and establish visual quality objectives (VQOs) under the Forest Practices Code.. Once visual quality objectives have been established, on-the-ground forest practices are designed and carried out to achieve stated visual objectives.</p> <p>Visual quality objectives define the amount of visual alteration acceptable from a given viewpoint. The choice of scenic areas and significant viewpoints is based on social preferences.</p>
Means of achieving objective and target	Visual impact assessments are completed by licensees for operations proposed in scenic areas with established VQOs at the planning stage. They are used to estimate the potential visual impact of proposed operations on scenic resources and to assess whether the VQOs would be achieved.
<b>Forecast; Initial Results or Outcome</b>	<p>Base line for priority indicator (2001)</p> <p>One hundred percent of cutblocks in known scenic areas had visual quality assessments where they were required.</p> <p>In addition, visual impact assessments were completed on 3 harvested cutblocks which did not require assessments.</p>
<b>Forecast; Predicted Results or Outcome</b>	<p>Visual quality management will reflect social values.</p> <p>Management for visual quality within scenic areas is based on social preferences. These preferences generally constrain timber supply, and as such have been provided for in the TSA Timber Supply Review. Management for visual quality often contributes to other non-timber objectives.</p>
<b>Target</b>	Conduct visual impact assessments in known scenic areas (visual impact assessment demonstrates how harvest meets intent of visual quality objectives).
Basis for the Target	Visual Impact Assessment Guidebook. Legal requirements. Changes in visual appearance is often the primary harvesting or road building impact noticed by the general public.
Legal Requirements	Forest Practices Code of British Columbia Act, Operational and Site Planning Regulation, Timber Harvesting and Silviculture Practices Regulation
<b>Monitoring &amp; Measurement</b> Periodic	
Annual	Licensees will report the number of harvested cutblocks in known scenic areas with visual impact assessments completed as compared to the number of cutblocks harvested which required a visual impact assessment during the reporting year.
Variance (Indicators)	Variance is provided for within the legal framework.

## Section 6.0 – Indicators and Indicator Matrices

<b>Indicator</b>	<b>23. Number of forest development plan/forest stewardship plan meetings.</b>
<b>Element(s)</b>	5.1 Timber and Non-Timber Benefits
<b>Strategy(s)</b> Description	Public and stakeholder involvement in plans such as Forest Development Plan\Forest Stewardship Plan reviews is intended to facilitate the exchange of information between developers and people interested in, or affected by, forest operations.  Licensees in the Merritt TSA have a long-standing commitment to work with directly affected stakeholders and members of the public on forest management issues and there is a well-established history of participation in community meetings, including local planning processes.
Means of achieving objective and target	Licensees' commitment to work with directly affected stakeholders and members of the public on forest management issues continues to be achieved by licensees maintaining an established stakeholders list and advising those on the list of proposed activities contained within their proposed stewardship plan. The broader public is also asked to participate in forest development plan/forest stewardship plan proposals through newspaper advertisements and open houses. In addition, licensees are committed to providing topical education updates on forest management issues during public meetings. Members of the public participate in local planning processes and meetings on forest management issues.
<b>Forecast;</b> Initial Results or Outcome	Base line for priority indicator (2001)  A total of 87 meetings were held to discuss Forest Development Plans.
<b>Forecast;</b> Predicted Results or Outcome	Participatory processes for forest planning will be open, inclusive, and responsive to stakeholder and license holders concerns.
<b>Target</b>	Provide opportunity for public input at Forest Development Plan\Forest Stewardship Plan meetings.
Basis for the Target	Legal requirements. Licensees are committed to making ongoing efforts to improve the effectiveness of public processes in the Merritt TSA.
Legal Requirements	Forest Practices Code of British Columbia Act, Operational and Site Planning Regulation. Forest and Range Practices Act
<b>Monitoring &amp; Measurement</b> Periodic	
Annual	Licensees will report the number of meetings (including amendments) which were held and available to discuss Forest Development Plans\Forest Stewardship Plans and the number of people who attended these meetings.
Variance (Indicators)	None

*Section 6.0 – Indicators and Indicator Matrices*

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<b>Indicator</b>	<b>24. Maintain an SFM Advisory Group.</b>
<b>Element(s)</b>	6.3 Public Participation, 6.4 Information for Decision-Making
<b>Strategy(s)</b> Description	<p>The SFM Advisory Group was formed to assist licensees in developing the SFM Plan by identifying local values, objectives, indicators and targets and evaluating the effectiveness of the Plan. The SFM Plan is an evolving document that will be reviewed and revised on an annual basis with the SFM Advisory Group to address changes in forest condition and local community values.</p> <p>Indicator (24) demonstrates a commitment by licensees to develop and continually improve upon a Sustainable Forest Management Plan, irrespective of whether or not they intend to pursue formal certification. This will ensure consistency of sustainable forest management across the TSA.</p> <p>Build a commitment to maintaining communication and local public involvement.</p>
Means of achieving objective and target	Licensees provide a meaningful forum for interested members of the public to participate in planning for sustainable forest management. Each year the SFM Advisory Group will review an annual report prepared by licensees to assess achievement of performance measures. This monitoring process will provide the licensees, public and First Nations with an opportunity to bring forward new information and to provide input concerning new or changing public values that can be incorporated into future updates of the SFM Plan.
<b>Forecast;</b> Initial Results or Outcome	<p>Base line for priority indicator (2001)</p> <p>Two Advisory Group meetings were held during the reporting period.</p>
<b>Forecast;</b> Predicted Results or Outcome	Licensees will demonstrate a commitment to maintaining communication and local public involvement.
<b>Target</b>	Conduct a minimum of two meetings per year.
Basis for the Target	Licensees are committed to making ongoing efforts to improve the effectiveness of the Public Advisory Group processes in the Merritt TSA.
Legal Requirements	NA
<b>Monitoring &amp; Measurement</b>	
Periodic	
Annual	Licensees will report the number of SFM Advisory Group meetings held during the reporting year.
Variance (Indicators)	One meeting.

## Section 6.0 – Indicators and Indicator Matrices

<b>Indicator</b>	<b>25. Number of First Nations consultation meetings attended related to Forest Development Plan/Forest Stewardship Plan.</b>
<b>Element(s)</b>	5.2 Communities and Sustainability, 6.1 Aboriginal and Treaty Rights, 6.2 Respect for Aboriginal Forest Values, Knowledge, and Uses
<b>Strategy(s)</b> Description	<p>As responsible stewards of public forest land, licensees work proactively with First Nations to build mutually beneficial relationships.</p> <p>First Nations involvement in plans such as Forest Development Plan/Forest Stewardship Plan reviews is intended to facilitate the exchange of information between developers and First Nations people interested in, or affected by, forest operations.</p> <p>Licensees in the Merritt TSA have a long-standing commitment to work with directly affected First Nations on forest management issues and there is a well-established history of participation in community meetings, including local planning processes.</p>
Means of achieving objective and target	Licensees' commitment to work with directly affected First Nations communities on forest management issues continues to be achieved by licensees maintaining an established contact list and advising those on the list of proposed activities contained within their proposed development plan (Forest Development Plan/Forest Stewardship Plan). The broader community is also asked to participate in plan proposals through newspaper advertisements and open houses. In addition, licensees are committed to providing topical education updates on forest management issues during meetings.
<b>Forecast;</b> Initial Results or Outcome	<p>Base line for priority indicator (2001)</p> <p>Eighty-one First Nations consultation meetings were attended by SFM licensees across the TSA.</p>
<b>Forecast;</b> Predicted Results or Outcome	<p>Forest operations will reflect the timber and non-timber interests of local First Nations.</p> <p>As responsible stewards of public forest land, licensees work proactively with First Nations to build mutually beneficial relationships.</p>
<b>Target</b>	Participate in Forest Development Plan/Forest Stewardship Plan consultation meetings with First Nations related to government consultation process.
Basis for the Target	<p>Legal requirements. Licensees are committed to making ongoing efforts to improve the effectiveness of-First Nations communication processes in the Merritt TSA.</p> <p>Consultation with First Nations on Forest Development Plans/Forest Stewardship Plans supports the provincial government's legal obligation to consult with First Nations regarding Aboriginal rights and title.</p>
Legal Requirements	Forest Practices Code of British Columbia Act, Operational and Site Planning Regulation. Forest and Range Practices Act., Heritage Conservation Act
<b>Monitoring &amp; Measurement</b> Periodic	
Annual	Licensees will report the number of Forest Development Plan/Forest Stewardship Plan consultation meetings held with First Nations.
Variance (Indicators)	None

## Section 6.0 – Indicators and Indicator Matrices

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<b>Indicator</b>	<b>26 First Nations involvement in Nicola Similkameen Innovative Forestry Society (NSIFS).</b>
<b>Element(s)</b>	5.2 Communities and Sustainability, 6.2 Respect for Aboriginal Forest Values, Knowledge, and Uses
<b>Strategy(s)</b> Description	As responsible stewards of public forest land, licensees work proactively with First Nations to build mutually beneficial relationships  NSIFS uses innovative forest management practices that incorporate Aboriginal knowledge and values and public involvement in order to increase the productivity of a healthy and resilient working forest. These local forests provide increased forest values, additional investment and enhanced employment opportunities while assuring environmental, economic and social sustainability for communities in the Nicola - Similkameen region. NSIFS Forestry Plan #1 3
Means of achieving objective and target	First Nations are involved in the Nicola Similkameen Innovative Forestry Society.  First Nations have representation on the Board of Directors and Technical Committee and are currently developing “species of interest” accounts which will be used with Predictive Ecosystem Mapping in the future.
<b>Forecast;</b> Initial Results or Outcome	Base line for priority indicator (2001)  First Nations are involved in the Nicola Similkameen Innovative Forestry Society.
<b>Forecast;</b> Predicted Results or Outcome	Forest operations will reflect the timber and non-timber interests of local First Nations.  As responsible stewards of public forest land, licensees work proactively with First Nations to build mutually beneficial relationships.
<b>Target</b>	Report on First Nations involvement in Nicola Similkameen Innovative Forestry Society.
Basis for the Target	Key NSIFS principle: “... full participation of First Nations in the management and decision making of the IFPA.
Legal Requirements	NA
<b>Monitoring &amp; Measurement</b> Periodic	
Annual	Licensees (through the NSIFS) will report the nature of involvement that First Nations had with the Nicola Similkameen Innovative Forestry Society (NSIFS).
Variance (Indicators)	None

## Section 6.0 – Indicators and Indicator Matrices

<b>Indicator</b>	<b>27. Maintain number of extension activities offered to reach individuals.</b>
<b>Element(s)</b>	6.3 Public Participation, 6.4 Information for Decision-Making
<b>Strategy(s)</b> Description	Increase the ability of the public to participate, contribute and respond to forest management priorities, strategies and plans Open lines of communication facilitate public awareness and understanding of the SFMP and other current forestry topics, and provide an open opportunity for the public to respond. Members of the public can provide local knowledge that contributes to socially and environmentally responsible forest management.
Means of achieving objective and target	Licensees are committed to providing topical education updates on forest management issues. Members of the public participate in local planning processes and meetings on forest management issues.  Licensees cooperatively manage a web site dedicated to providing the latest SFMP information. The site also provides topical forestry information either by maintaining the information on the web site or providing links to applicable sites.  Licensees develop and distribute SFMP and other information to the public at least annually
<b>Forecast; Initial Results or Outcome</b>	Base line for priority indicator  27a: Extension activities reached 897 people in the TSA. (2001)  Licensees were involved in program development and training initiatives in the reporting period.  27b: New target -- 2003 Monitoring Report  27c: New target -- 2003 Monitoring Report
<b>Forecast; Predicted Results or Outcome</b>	The local public will be educated and informed about sustainable forest management and will provide input into forest planning and operations.  Public awareness and understanding of the SFMP. An SFMP that has openly informed, included and responded to the public.
<b>Target</b>	27a: Maintain the number of extension activities such as career days, classroom presentations, tours and open houses.  27b:TSA Licensees will keep members of the public informed of forestry strategies being developed, and planning occurring by: <ul style="list-style-type: none"> <li>• Maintaining a website</li> <li>• Circulating SFMP and other information to the public at least annually (news release/leaflet/open house etc.)</li> </ul> 27c: TSA Licensees respond to all written requests from the public for communication within 30 days of their receipt.
Basis for the Target	Licensees are committed to making ongoing efforts to improve the effectiveness of public processes in the Merritt TSA.
Legal Requirements	NA
<b>Monitoring &amp; Measurement</b> Periodic	
Annual	27a: Licensees will report the number of forestry extension activities that were offered to reach community people and the number of community people that attended each activity.  27b: Licensees will report a yes/no answer as to whether the web site is being maintained, and whether SFMP and other information was made publicly available in the last year.  27c: Licensees will report on the number of responses sent out by licensees compared to the number of written requests for communication. Report the average timeline for response.
Variance (Indicators)	None

## Section 6.0 – Indicators and Indicator Matrices

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<b>Indicator</b>	<b>29. Number of business initiatives and partnerships.</b>
<b>Element(s)</b>	5.2 Communities and Sustainability, 5.3 Fair Distribution of Benefits and Costs
<b>Strategy(s)</b> Description	Licensees will contribute to the diversification and sustainability of local economies. The purpose of this Indicator is to determine if industry is sustainable over time. Currently gathering baseline data through annual reporting.
Means of achieving objective and target	Licensees seek and maintain active, mutually beneficial business relationships with other forest products businesses in the TSA and vicinity.
<b>Forecast;</b> Initial Results or Outcome	Base line for priority indicator (2001) SFM licensees were involved in 22 annual value-added business initiatives and partnerships.
<b>Forecast;</b> Predicted Results or Outcome	Licensees will contribute to the diversification and sustainability of local economies.
<b>Target</b>	Report business initiatives and partnerships <sup>6</sup> .
Basis for the Target	Business initiatives and partnerships, built on “win win” principles, are not only beneficial to the partners, but also to the economy and vitality of the TSA.
Legal Requirements	NA
<b>Monitoring &amp; Measurement</b> Periodic	
Annual	Licensees will report and provide detail regarding local business initiatives and partnerships.
Variance (Indicators)	None

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<sup>6</sup> Benchmark and develop a target over time

*Section 6.0 – Indicators and Indicator Matrices*

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<b>Indicator</b>	<b>30. Number of written comments from First Nations related to Forest Development Plan/Forest Stewardship Plan proposals and the number of responses.</b>
<b>Element(s)</b>	5.2 Communities and Sustainability, 6.1 Aboriginal and Treaty Rights, 6.2 Respect for Aboriginal Forest Values, Knowledge, and Uses
<b>Strategy(s)</b> Description	Indicator (30) recognizes the importance of open communication and providing opportunities for meaningful participation of First Nations in forestry planning.  First Nations involvement in plans such as Forest Development Plan/Forest Stewardship Plan reviews is intended to facilitate the exchange of information between developers and First Nations people interested in, or affected by, forest operations.
Means of achieving objective and target	Open communications with First Nations during Forest Development Plan/Forest Stewardship Plan reviews will include appropriate consideration of identified values. All written requests will be considered and responded to. Where specific written concerns were not incorporated into the Forest Development Plan/Forest Stewardship Plan, licensees will provide a letter of explanation (including options for recourse).
<b>Forecast; Initial Results or Outcome</b>	Base line for priority indicator (2001)  There were 58 written comments from First Nations for the reporting period and 57 written responses. The outstanding request was written in December 2001 and will be responded to in 2002.
<b>Forecast; Predicted Results or Outcome</b>	Consultation processes for forest planning will be open, inclusive, and responsive to First Nation concerns.
<b>Target</b>	Open communications with First Nations during Forest Development Plan/Forest Stewardship Plan reviews will include appropriate consideration of identified values. All written requests will be considered and responded to. Where specific written concerns were not incorporated into the Forest Development Plan/Forest Stewardship Plan, licensees will provide a letter of explanation (including options for recourse).
Basis for the Target	Legal requirements. To ensure that First Nations input can be considered in plan development
Legal Requirements	Forest Practices Code of British Columbia Act, Operational and Site Planning Regulation. Forest and Range Practices Act
<b>Monitoring &amp; Measurement</b> Periodic	
Annual	Licensees will report the number of First Nation written comments specifically related to Forest Development Plan/Forest Stewardship Plan responded to, compared to the number of First Nations written comments received in the reporting year that need a response.
Variance (Indicators)	None

## Section 6.0 – Indicators and Indicator Matrices

<b>Indicator</b>	<b>31. Number of written comments from stakeholders and public related to the Forest Development Plan/Forest Stewardship Plan proposals and the number of responses.</b>
<b>Element(s)</b>	5.1 Timber and Non-Timber Benefits, 5.2 Communities and Sustainability
<b>Strategy(s)</b> Description	<p>Public and stakeholder involvement in plans such as Forest Development Plan/Forest Stewardship Plan reviews is intended to facilitate the exchange of information between developers and people interested in, or affected by, forest operations.</p> <p>To ensure that public input can be considered in plan development, comments are submitted to the development proponent in writing. The licensee's response will document actions taken to accommodate public concerns. This formal process ensures public concerns pertaining to items such as recreation features, visual quality, identified trails or other features of significance are identified as early as possible in the known information available to licensees for planning.</p>
Means of achieving objective and target	Open communications with stakeholders and public during Forest Development Plan/Forest Stewardship Plan reviews will include appropriate consideration of identified values. All written requests will be considered and responded to. Where specific written concerns were not incorporated into the plan, licensees will provide a letter of explanation (including options for recourse).
<b>Forecast;</b> Initial Results or Outcome	<p>Base line for priority indicator (2001)</p> <p>One hundred percent (57 of 57) written requests from the public specifically related to the Forest Development Plan referrals were responded to in writing by licensees.</p>
<b>Forecast;</b> Predicted Results or Outcome	Consultation processes for forest planning will be open, inclusive, and responsive to stakeholder and public concerns.
<b>Target</b>	<p>Open communications with stakeholders and public during Forest Development Plan/Forest Stewardship Plan reviews will include appropriate consideration of identified values. All written requests will be considered and responded to. Where specific written concerns were not incorporated into the Forest Development Plan/Forest Stewardship Plan, licensees will provide a letter of explanation (including options for recourse).</p> <p>Small Scale Salvage licensees will report communications with stakeholders and public that have occurred during the development of their professional submissions. Where these communications result in expressed concerns, these concerns will be addressed in the licence document.</p>
Basis for the Target	Legal requirements. To ensure that public input can be considered in plan development
Legal Requirements	Forest Practices Code of British Columbia Act, Operational and Site Planning Regulation. Forest and Range Practices Act
<b>Monitoring &amp; Measurement</b> Periodic	
Annual	<p>Licensees will report the number of stakeholder and public written comments specifically related to Forest Development Plan/Forest Stewardship Plan referral that need a response, as compared to the number of Forest Development Plan consultation-comments responded to by licensees during the reporting year.</p> <p>The Small Scale Salvage Program will report on the number of stakeholder and public comments that were reflected in the licence document and the number of stakeholder and public commitments subsequently achieved on the ground.</p>
Variance (Indicators)	None

*Section 6.0 – Indicators and Indicator Matrices*

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<b>Indicator</b>	<b>32. Amount of time for road cut and fill slope grass seeding application.</b>
<b>Element(s)</b>	3.2 Water Quality and Quantity
<b>Strategy(s)</b> Description	Prompt revegetation of road cuts and fill slopes will minimize potential for soil movement and sedimentation. This will contribute to maintenance of water quality and long-term productivity of the land. Prompt revegetation of harvested areas will also contribute to noxious weed control.  Water quality will be maintained and space for the establishment of noxious weeds will be minimized through the timely revegetation application of exposed soils on newly constructed road cut and fill slopes to reduce the potential for soil movement and sedimentation.
Means of achieving objective and target	Licenses schedule and complete timely seeding of exposed soil.
<b>Forecast;</b> Initial Results or Outcome	Base line for priority indicator (2001)  Road cuts and fill slopes were seeded within one month of completed road construction on average, compared to a target of 12 months.
<b>Forecast;</b> Predicted Results or Outcome	Water quality will be maintained and space for the establishment of noxious weeds will be minimized through the timely revegetation application of exposed soils on newly constructed road cut and fill slopes to reduce the potential for soil movement and sedimentation.
<b>Target</b>	For roads where grass seeding is planned, all cut and fill slope seeding application carried out within 12 months of completed road construction.
Basis for the Target	Reduce soil erosion and sedimentation of streams, and reduce noxious weed establishment.
Legal Requirements	Forest Practices Code of British Columbia Act, Forest Road Regulation
<b>Monitoring &amp; Measurement</b> Periodic	
Annual	Licenses will report the average time (months) for road cut and fill slope seeding application completed during the reporting year on newly constructed roads.
Variance (Indicators)	None

## Section 6.0 – Indicators and Indicator Matrices

<b>Indicator</b>	<b>33. Protected ecosystems</b>
<b>Element(s)</b>	1.1 Ecosystem Diversity, 1.4 Protected Areas and Sites of Special Biological Significance
<b>Strategy(s)</b> Description	<p>Indicator (33) forms part of the overall strategy to manage for biodiversity at the landscape level. There are several initiatives or strategies in place to protect representative examples of British Columbia's natural diversity and recreational opportunities including special natural, cultural heritage and recreational features. The delineation of protected areas and values is not static and as new species, habitats and values are continuing to be identified over the landscape, measures are prescribed and implemented for protection. These strategies seek to ensure that representative components of biological diversity will be maintained under various management regimes. Currently there are eight forms of protected areas in the TSA. The following identifies each with the corresponding area of Timber Harvesting Land set aside: Existing Parks and Ecological Reserves: 11,017ha. Approved Study Areas: 3,896ha. Cultural Heritage Resources: 43ha. Hudson Bay Trail: 423ha. Approved Wildlife Habitat Areas: 68.0ha. Wildlife Tree Patches: 12,995ha. Water Intakes for Community Watersheds: 3.0ha. Riparian management areas: 32,111ha. As streams are inventoried, classifications and associated areas of protection will change. This will occur until all streams and watercourses within the TSA are measured and inventoried.</p> <p>In addition to the above, the TSA has established spatially explicit draft Old Growth Management Areas (OGMAs) throughout each of the existing twelve Landscape Units (LU). OGMAs were selected from old and mature forests. In addition to the age criteria, stands having resource values present that depend on or are associated with old forests were selected above those that did not. In total, the draft OGMA area occupies approximately 114,000 hectares or 10% of the total area within the TSA.</p>
Means of achieving objective and target	<p>Licensees plans incorporate any necessary provisions required to meet protected area targets .</p> <p>Licensees will participate, to the extent Government process allow, in the delineation of additional protected areas or refining existing areas.</p>
<b>Forecast;</b> Initial Results or Outcome	<p>Base line for priority indicator (2003)</p> <p>Currently 60,548 hectares of the Timber Harvesting land base in the Merritt TSA is protected.</p>
<b>Forecast;</b> Predicted Results or Outcome	Protected Area within the Merritt TSA contributes to Provincial representation.
<b>Target</b>	<p>Maintain 60,548 hectares of the land base in the Merritt TSA as protected area. As new inventories are completed, update the areas of the land base that are affected.</p> <p>Maintain the retention of existing or replacement draft old growth management area.</p>
Basis for the Target	Areas are set aside or established by the provincial government.
Legal Requirements	Forest Practices Code of British Columbia Act, Operational and Site Planning Regulation, Ecological Reserve Act, Park Act, Protected Areas of BC Act
<b>Monitoring &amp; Measurement</b> Periodic	Current status is provided as part of Timber Supply Review completed every 5 years.
Annual	<p>Licensees report the current number of hectares maintained as Protected Areas as last reported by a Timber Supply Review</p> <p>Licensees report the total area of draft OGMA's within their operating area and the area of net OGMA reduction as a result of their operations.</p>
Variance (Indicators)	5 percent

## Section 6.0 – Indicators and Indicator Matrices

<b>Indicator</b>	<b>34. Forest age class distribution</b>
<b>Element(s)</b>	1.1 Ecosystem Diversity, 4.1 Carbon Uptake and Storage
<b>Strategy(s)</b> Description	A balanced age class distribution allows for an even flow of timber values and benefits. A reduction of the current imbalance of mature to over mature stands also reduces forest health risks.  Forecasted forest age class distribution over time provides an indication of sustainability.  Balanced age classes will result in a larger proportion of hectares in younger faster growing stands with a net carbon intake.
Means of achieving objective and target	Maintain current harvest priority:  1. Forest health management – harvesting attacked and susceptible stands (generally older stands)  2. “Available” stands with the most years beyond culmination (maximum mai)  Immediate implementation.
<b>Forecast; Initial Results or Outcome</b>	Base line for priority indicator (2003)  No age classes currently meet target; 4 at 12.5 % and 5 at 8.3%..  Age classes 1 to 5 average only 8% reflecting the disproportionate area in over mature age classes.
<b>Forecast; Predicted Results or Outcome</b>	Continuation of current harvest priorities will lead to balanced age classes on the available productive forest land. Protected Area, Old Growth Management Area (OGMA), and Wildlife Tree Patch Strategies , together with inaccessible areas, ensure retention of sufficient old growth to sustain biodiversity and ecosystem objectives.  Progress to target will be steady:  ▪ In 50 years age classes 1 to 5 average 10.2% and two age classes meet target.  Target will be achieved within 100 years
<b>Target</b>	Maintain a stable forest age class distribution on the timber harvesting land base. Each age class to 100 years old [1 (1 to 20), 2 (21-40), 3 (41-60), 4 (61 to 80) and 5 (81 to 100)] occupies at least 14% of the timber harvesting land base.
Basis for the Target	Relatively even flow of value to industry and the community
Legal Requirements	NA
<b>Monitoring &amp; Measurement</b> Periodic	Current status and future forecast of age class distribution is provided as part of Timber Supply Review completed every 5 years.
Annual	Licensee report the current age class distribution on as last reported by a Timber Supply Review
Variance (Indicators)	Target achieved within 120 years.

## Section 6.0 – Indicators and Indicator Matrices

<b>Indicator</b>	<b>35. Advisory Group Participant Satisfaction Survey</b>
<b>Element(s)</b>	6.3 Public Participation, 6.4 Information for Decision Making
<b>Strategy(s)</b> Description	<p>The SFM Advisory Group was formed to assist licensees in developing the SFM Plan by identifying local values, objectives, indicators and targets and evaluating the effectiveness of the Plan. The SFM Plan is an evolving document that will be reviewed and revised on an annual basis with the SFM Advisory Group to address changes in forest condition and local community values.</p> <p>Ensuring the continuing interest and participation of this important Group is a Licensee priority. Interest and participation will be enhanced by provision of relevant information including ecosystem processes and human interaction with forest ecosystems.</p>
Means of achieving objective and target	<p>Licensees provide all Advisory Group members, and interested public who have shown notable interest (written comments or SFMP meeting attendance) during the year, a feedback form at the first meeting called to review the previous years monitoring report.</p> <p>At least one question in the survey will address the effectiveness of information delivery (Indicator 27)</p>
<b>Forecast; Initial Results or Outcome</b>	<p>Base line for priority indicator</p> <p>2004 feedback results</p>
<b>Forecast; Predicted Results or Outcome</b>	Continuing dedicated, motivated Advisory Group
<b>Target</b>	<p>35a. 80% of responses “3” or better</p> <p>35b. All written comments be reviewed and considered, and all line responses averaging less than 3 become action items</p>
Basis for the Target	Ensure issues are resolved, and Advisory Group process continuously improved.
Legal Requirements	NA
<b>Monitoring &amp; Measurement</b> Periodic	Involve broader community in survey every 1 to 3 years
Annual	<p>Survey responses coded 1 (poor), 2, 3 (satisfactory), 4, 5 (well done), and averaged.</p> <p>Results of feedback form compiled and reported, including any written comments, as part of annual monitoring program.</p>
Variance (Indicators)	None

## Section 6.0 – Indicators and Indicator Matrices

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<b>Indicator</b>	<b>36. Mean Annual Increment (MAI)</b>
<b>Element(s)</b>	2.2 Forest Ecosystem Productivity, 4.1 Carbon Uptake and Storage
<b>Strategy(s)</b> Description	Mean Annual Increment is an indicator of the sustainability of management practices and the productivity of ecosystems. An upward trend in Mean Annual Increment also indicates increased carbon utilization and storage in vigorous stands.
Means of achieving objective and target	Mean Annual Increment can be increased by <ul style="list-style-type: none"> <li>▪ Replacing stagnate slow growing stands with younger more vigorous stands</li> <li>▪ Using effective silviculture practices to increase growth rates (prompt regeneration, superior seed, site preparation etc.)</li> </ul>
<b>Forecast;</b> Initial Results or Outcome	Base line for priority indicator (2003) Current Lodgepole pine MAI, including smallwood, is 1.52 cubic meters per hectare per year.
<b>Forecast;</b> Predicted Results or Outcome	Maintained or increasing Mean Annual Increment. Maintained or increased carbon storage and flow of forest values over time.
<b>Target</b>	Maintain the long term productivity of the forest as measured by the mean annual increment (m <sup>3</sup> /ha/yr) for Lodgepole pine.
Basis for the Target	Introduction of improved seed, effective forest management practices and future age class distribution support increased Increasing Mean Annual Increment over time.
Legal Requirements	NA
<b>Monitoring &amp; Measurement</b> Periodic	Information required for reporting is provided as part of Timber Supply Review completed every 5 years. Beginning and end of simulation data is to be plotted over successive 5 year periods to confirm achievement of target.
Annual	Licensee report the current mai as last reported by a Timber Supply Review
Variance (Indicators)	None



## **Glossary of Terms**



## Glossary of Terms

The following definitions were taken from the CAN/CSA-Z809-02, the *Forest Practices Code of British Columbia Act*, the Ministry of Forests Glossary of Resource Planning Terms (April, 1996) and from discussions with the SFM Advisory Group.

**Biodiversity (or biological diversity)** – the diversity of plants, animals, and other living organisms in all their forms and levels of organization, including genes, species, ecosystems, and the evolutionary and functional processes that link them. (Glossary of Resource Planning Terms)

**Comment** – a remark or observation. In the context of this Plan, comments are generally specified as those in writing.

**Commitment** – a pledge to do something

**Defined Forest Area (DFA)** – a specified area of forest, including land and water (regardless of ownership or tenure) to which the requirements of this Standard apply. The DFA may or may not consist of one or more contiguous blocks or parcels. (CSA Z809-02)

**Free growing stand** – a stand of healthy trees of commercially valuable species, the growth of which is not impeded by competition from plants, shrubs or other trees. (*Forest Practices Code of British Columbia Act*)

**Healthy Forest** – a healthy forest is a forest that functions and contains a representation of the structural elements similar to those that would be expected to occur as a result of natural disturbance in an unmanaged forest. (SFM Advisory Group)

**Indicator** – a variable that measures or describes the state or condition of a value (see Figure 5 of the Standard). (CSA Z809-02)

**Known information** – a feature, objective or other thing that is contained in a higher level plan or is otherwise made available by a district manager or designated environmental official at least four months before the operational plan is submitted for approval. (*Forest Practices Code of British Columbia Act*)

**Native** – Native flora and fauna include the biotic community that is indigenous to the area and may also include acclimatized or naturalized non-native species. (SFM Advisory Group)

**Natural Disturbance Type 4:** One of five natural disturbance regimes recognized in BC under which ecosystems have evolved. These disturbance regimes can be either stand initiating disturbances where the existing forest is terminated through agents such as fire, wind, insects or landslides or stand maintaining disturbances where the existing forest structure is adjusted (such as an understory fire in a fir-yellow pine forest). (SFM Advisory Group)

**Objective** – a broad statement describing a desired future state or condition of a value (see Figure 5 of the Standard). (CSA-Z809-02)

**Operational plans** – detail the logistics for forest and range development in particular locations. Methods, schedules and responsibilities for accessing, harvesting, renewing, and protecting the resources are set out to enable site specific operations to proceed. Operational plans include forest development plans, range use plans, and silviculture prescriptions. (*Forest Practices Code of British Columbia Act*)

**Permanent access structures** – are roads, landings, borrow pits, gravel pits, and quarries that are required to be used or provide access for timber harvesting or other forest management activities and whose continuous or periodic use will continue for a long enough time to prevent the re-establishment of forested vegetation. Permanent access structures are not part of the productive landbase. (*Forest Practices Code of British Columbia Act*)

**Predictive Ecosystem Mapping** – is a computer, GIS, and knowledge-based method to assist in the stratification of landscapes into ecologically-oriented map units based on the overlaying of mapped themes and the processing of resultant attributes by inference methods in association with a formalized knowledge base comprising ecological-landscape relationships. (*Ministry of Forests, TEM Alternative Task Force*)

**Reached** – personal communication i.e. discussion, correspondence. Does not include advertising.

**Regeneration Delay** – is the maximum period permitted to achieve the minimum stocking levels using the preferred and acceptable species of acceptable size, age and vigour. The regeneration delay period begins when harvesting begins. (*Guide to Site Identification and Interpretation for the Kamloops Forest Region*)

**Riparian reserve zones** – means that portion, if any, of the riparian management area or lakeshore management area located adjacent to a stream, wetland or lake of a width determined in accordance with Part 8. (*Forest Practices Code of British Columbia Act, Operational and Site Planning Regulation*)

**Seral stage distribution** – the stages of ecological succession of a plant community (e.g., from young stage to old stage). The characteristic sequence of biotic communities that successively occupy and replace each other by which some components of the physical environment become altered over time. (*Glossary of Resource Planning Terms*)

**Sustainable forest management** – management to maintain and enhance the long-term health of forest ecosystems, while providing ecological, economic, social, and cultural opportunities for the benefit of present and future generations. (CSA-Z809-02)

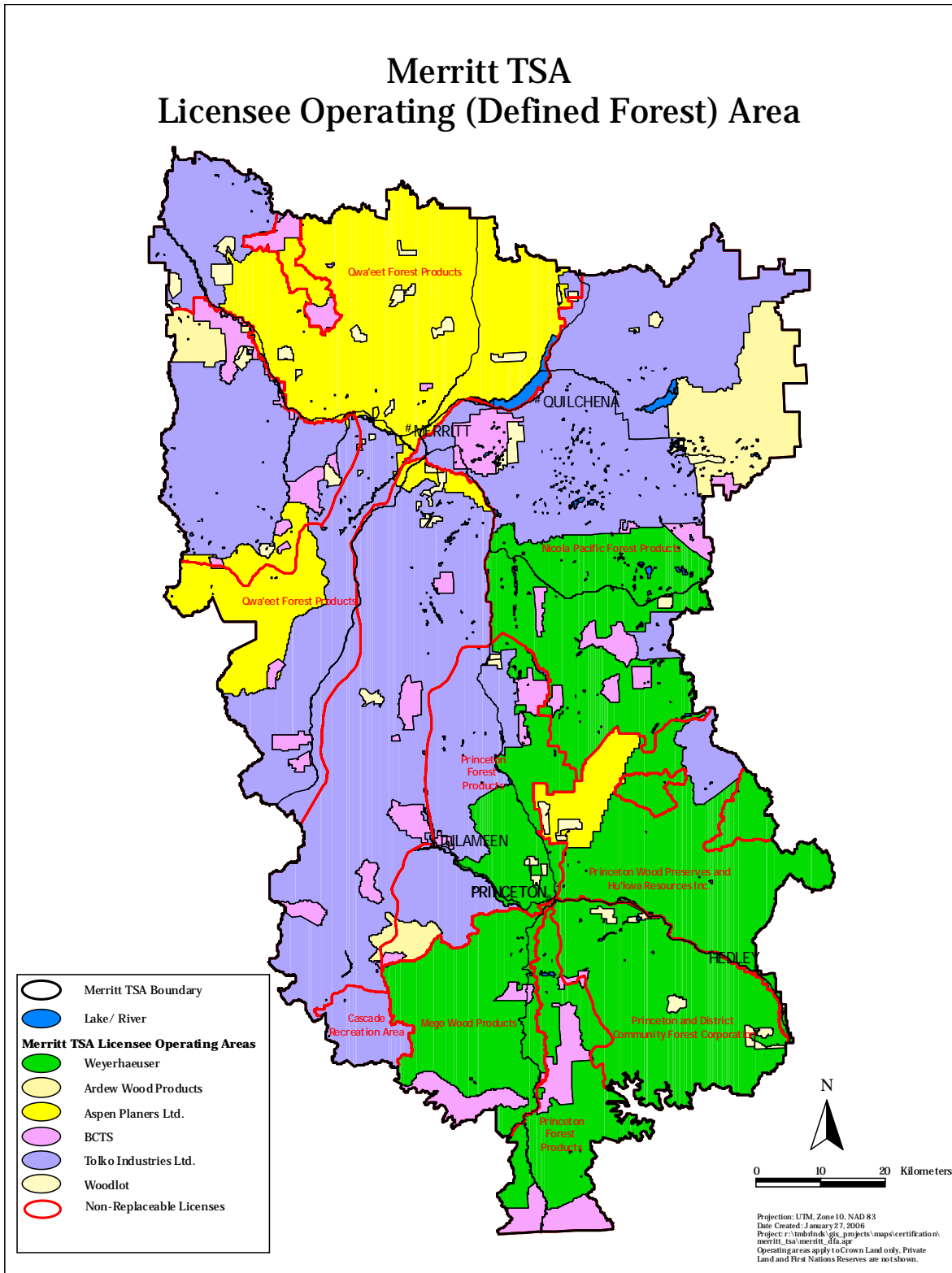
**Sustainable forest management system** – the structure, responsibilities, practices, procedures, processes, and time frames set by a registrar for implementing, maintaining, and improving SFM (see Figure 2 of the Standard). (CSA-Z809-02).

**Target** – a specific statement describing a desired future state or condition of an indicator. Targets should be clearly defined, time-limited, and quantified, if possible (see Figure 5 of the Standard). (CSA-Z809-02)

# **Appendix 1**

## **Merritt TSA SFM Area Map**







# **Appendix 2**

## **SFM Plan Reporting Format**



## **Appendix 2: SFM Plan Reporting Format**

Following is the format that licensees will use when reporting the results of monitoring the SFM Plan. Licensees provide the information required in the form annually. Information from individual licensees is compiled into a TSA Annual Monitoring Report. The Monitoring Report contributes to an annual review to confirm that the CSA performance measures are being met. The SFM Advisory Group reviews and comments on the Monitoring Report.



## Merritt TSA Sustainable Forest Management Plan Annual Report

Reporting year: \_\_\_\_\_

Licensee: \_\_\_\_\_

**Note:** For ease of consolidating reports for the TSA, provide figures as required for all monitoring data

Tar #	Monitoring parameter	Monitoring results
2	<p><b>Monitoring/Reporting:</b> Licensees will report the number of riparian related non-conformances to licensee plans as compared to the number of riparian commitments in licensee plans occurring during the reporting year. Details will be provided for all non-conformances.</p>	<p>____ # of riparian commitments in plans</p> <p>____ # of non-conformances to riparian commitments in plans</p> <p>Provide details regarding non-conformances below:</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>
3	<p><b>Monitoring/Reporting:</b> Licensees will report, for cutblocks greater than 5 hectares, the number of cutblocks harvested with wildlife tree patches within or parented to the cutblock and/or individual trees/stubs within the cutblock as compared to the total number of cutblocks greater than 5 hectares harvested during the reporting year.</p>	<p>____ # of cutblocks &gt;5ha with associated Wildlife Tree retention /</p> <p>____ total # of cutblocks harvested</p>

Appendix 2 – SFM Plan Reporting Format

Tar #	Monitoring parameter	Monitoring results
4	<p><b>Monitoring/Reporting:</b> Licensees will report the number of First Nation commitments related to the Forest Development Plan (FDP) that were achieved as compared to the total number of First Nations commitments made in the FDP.</p> <p>The Small Scale Salvage Program will report the number of First Nation referral comments or commitments that were achieved by the licensee compared to the total number of First Nations referral comments or commitments that required action.</p>	<p>____ # of First Nation commitments related to FDP achieved / ____ total # of First Nation commitments made in FDP</p> <p><i>Small Scale Salvage Program</i></p> <p>____ # of First Nation referral comments/ commitments achieved ____ total # of First Nation referral comments/ commitments that required action</p>
5	<p><b>Monitoring/Reporting:</b> All trees regenerated on harvested areas must comply with stocking standards specified in Licensee plans, except in the case of the Small Scale Salvage Program, whereby stocking standards will be specified by the Ministry of Forests and Range. Licensees will report the:</p> <ul style="list-style-type: none"> <li>• number of harvested areas which were declared free growing and regenerated in compliance with stocking standards during the reporting period, as compared to the total number of harvested areas declared free growing during the reporting period.</li> </ul>	<p>____ # of harvested areas that were declared free growing and regenerated in compliance with the stocking standards ____ total # of harvested areas that were declared free growing</p>

Appendix 2 – SFM Plan Reporting Format

Tar #	Monitoring parameter	Monitoring results
6	<p><b>Monitoring/Reporting:</b> Licensees will report the area harvested where licensee plans contained commitments to protect Identified Wildlife and the area harvested where operations conformed to licensee plans to protect Identified Wildlife. Licensees will provide a list of IWMS species managed.</p>	<p>___# ha harvested where operations conformed to licensee plans to protect Identified Wildlife</p> <p>___# total # ha harvested where licensee plans contained commitments to protect Identified Wildlife</p> <p>List IWMS Species managed for:</p> <p>_____</p> <p>_____</p> <p>_____</p>
7	<p><b>Monitoring/Reporting:</b> Utilize local knowledge, actual on the ground indicators and strategy mapping to enable data consolidation. Licensees will report:</p> <ul style="list-style-type: none"> <li>the number of cutblocks harvested that were managed consistent with the mule deer winter range strategy as compared to the total number of cutblocks harvested that were within the mule deer winter range area.</li> </ul>	<p>___# of cutblocks managed consistent with mule deer strategy /</p> <p>___ total # of blocks harvested within mule deer winter range area</p>
8	<p><b>Monitoring/Reporting:</b> Licensees will report the volume of Canada #1 or equivalent grass seed applied and the volume of total seed applied (kilograms) for the reporting period.</p>	<p>___kg volume of Canada #1 seed applied or equivalent ___kg volume of total seed applied</p>

Appendix 2 – SFM Plan Reporting Format

Tar #	Monitoring parameter	Monitoring results
9	<p><b>Monitoring/Reporting:</b> Harvest priorities will be established internally and consistent with the District forest health strategy. These priorities are monitored and revised as new information is made available. Licensees will report the:</p> <ul style="list-style-type: none"> <li>• Number of hectares committed to harvest by critical time frame.</li> <li>• Number of hectares harvested within critical time frame.</li> </ul> <p>Licensees will report these figures by catastrophic forest health agent (e.g. mountain pine beetle)</p>	<p>_____ha committed to harvest by critical timeframe (by catastrophic forest health agent)</p> <p>_____ha harvested within critical timeframe (by catastrophic forest health agent)</p> <p>Catastrophic Health Agent _____</p>
10	<p><b>Monitoring/Reporting:</b> Licensees will report the area of cutblocks that achieved free growing status (prior to or at late free-growing date) as compared to the total hectares declared free growing status prior to, at or beyond late free-growing date (during the reporting year).</p>	<p>_____ha of cutblocks that achieved free growing status prior to or at late re-growing date /</p> <p>_____total ha declared free-growing status prior to, at or beyond late free-growing date</p>
11	<p><b>Monitoring/Reporting:</b> Licensees will report the cutblock area (ha) which achieved free growing status and the average time (years) that the cutblock outperformed late free growing date (weighted average based on cutblock area).</p>	<p>_____# of ha achieving free-growing prior to late free-growing date</p> <p>Average time _____years that cutblocks outperformed late free growing date (weighted average: [area x year] + [area x year] + [area x year] / total area)</p>

Appendix 2 – SFM Plan Reporting Format

Tar #	Monitoring parameter	Monitoring results
12	<p><b>Monitoring/Reporting:</b> Information from Licensee plans will be utilized unless an internal or Ministry of Forests and Range inspection reports the plan number has been exceeded, in which case the actual number will be used in report. Licensees will report the:</p> <ul style="list-style-type: none"> <li>cutblock area (ha) of permanent roads and landings identified in licensee plans as compared to the gross block area (ha) for cutblocks harvested during the reporting year.</li> </ul>	<p>____ha of permanent access structures / ____ha total gross cutblock area</p>
13	<p><b>Monitoring/Reporting:</b> Licensees will report the area (hectares) where soil disturbance commitments were not achieved as compared to the total gross area harvested during the reporting year.</p>	<p>____ha soil disturbance where plan commitments were not achieved (report impacted area only) ____total gross area harvested</p>
14	<p><b>Monitoring/Reporting:</b> Licensees will report the number and associated area of operationally caused slides resulting from a failure to perform a terrain hazard assessment or follow the recommendations within a completed assessment.</p>	<p>____# of slides ____Area of slides</p>

Appendix 2 – SFM Plan Reporting Format

Tar #	Monitoring parameter	Monitoring results
15	<p><b>Monitoring/Reporting:</b> Licensees will report the number of cutblocks harvested where the watershed ECA exceeded 35% and no further hydrological assessments were completed compared to the total number of cutblocks harvested where the watershed ECA exceeded 35%.</p>	<p>___ total # of cutblocks harvested where the watershed ECA exceeded 35%</p> <p>___ # cutblocks where ECA exceeded 35% and no further hydrological assessments were completed</p>
16	<p><b>Monitoring/Reporting:</b> Road inspection frequency is based on risk (i.e. community watershed, fish stream presence and level of deactivation, previous history). Licensees will report the:</p> <ul style="list-style-type: none"> <li>• Number of road/ structure inspections completed as compared to the number of inspections established in road maintenance programs during the reporting year.</li> <li>• Number of maintenance action items related to water management and soil movement completed as compared to the total number of maintenance action items that required completion during the reporting year.</li> </ul>	<p>___ # of road/ structure inspections completed /</p> <p>___ # of inspections established in program</p> <p>___ total # of maintenance action items requiring completion during the reporting period</p> <p>___ # of maintenance action items completed as scheduled</p>

Appendix 2 – SFM Plan Reporting Format

Tar #	Monitoring parameter	Monitoring results
17	<p><b>Monitoring/Reporting:</b> Utilize information for initial prescribed planting, not for fill planting. Licensees will report:</p> <ul style="list-style-type: none"> <li>• The area planted prior or within the third growing season as compared to the total area planted during the reporting year.</li> <li>• The hectares of naturally regenerated area which achieved regeneration delay as compared to the total hectares of naturally regenerated area where regeneration delay expired during the reporting year.</li> </ul>	<p>____ ha planted prior to or within the third growing season / ____ total ha planted</p> <p>____ ha of naturally regenerated area meeting regeneration delay / ____ total ha of naturally regenerated area where regeneration delay expired during the reporting year.</p>
18	<p><b>Monitoring/Reporting:</b> Licensees will report the harvest level allocated for each license and harvest level cut (cut control volume) for the past reporting year.</p>	<p>____ (License) ____ m3 annual harvest ____ m3 annual allocation</p> <p>____ (License) ____ m3 annual harvest ____ m3 annual allocation</p> <p>Variance exceeded ____ yes ____ no</p>
19	<p><b>Monitoring/Reporting:</b> Licensees will report the total output of lumber (thousand board feet), chips, shavings and hog fuel (bone dry units) from sawmills within the TSA. For other lumber products report the total output (m<sup>3</sup>) (e.g. posts).</p>	<p>Total lumber output ____ mbf</p> <p>Total chip, shavings and hog fuel output ____ bdu</p> <p>Total other ____ m<sup>3</sup></p>

Appendix 2 – SFM Plan Reporting Format

Tar #	Monitoring parameter	Monitoring results
20	<p>Monitoring/Reporting: Licensees will report:</p> <ul style="list-style-type: none"> <li>the number of timber processing facility operating days. the average number of shifts for day the mill was in production</li> <li>the number of mill employees on payroll</li> </ul>	<p>_____ # of timber processing facility operating days</p> <p>_____ average # of shifts for days the mill was in production</p> <p>_____ # of mill employees on payroll</p>
21	<p><b>Monitoring/Reporting:</b> Licensee will report the area harvested where licensee plans contained commitments to manage lakeshore and the area harvested where operations conformed to Licensee plans to manage lakeshore.</p>	<p>_____ total ha which required management for lakeshore guidelines</p> <p>_____ # ha where operations conformed to the plan</p>
22	<p><b>Monitoring/Reporting:</b> Licensees will report the number of harvested cutblocks in known scenic areas with visual impact assessments completed as compared to the number of cutblocks harvested which required a visual impact assessment during the reporting year.</p>	<p>_____ # of harvested cutblocks in known scenic areas with VIA completed /</p> <p>_____ # of cutblocks harvested which required VIA to be completed</p>
23	<p><b>Monitoring/Reporting:</b> Licensees will report the number of meetings (including amendments) which were held and available to discuss Forest Development Plans/Forest Stewardship Plans and the number of people who attended these meetings.</p>	<p>_____ # of FDP/FSP meetings</p> <p>_____ # of people who attended FDP/FSP meetings</p>
24	<p><b>Monitoring/Reporting:</b> Licensees will report the number of SFM Advisory Group meetings held during the reporting year.</p>	<p>_____ # of SFM advisory group meetings</p>



Appendix 2 – SFM Plan Reporting Format

Tar #	Monitoring parameter	Monitoring results
27	<p><b>Monitoring/Reporting:</b></p> <p>27a: Licensees will report the number of forestry extension activities that were offered to reach community people and the number of community people that attended each activity.</p> <p>27b: Licensees will report a yes/no answer as to whether the web site is being maintained, and whether SFMP and other information was made publicly available in the last year.</p> <p>27c: Licensees will report on the number of responses sent out by licensees compared to the number of written requests for communication. Report the average timeline for response.</p>	<p>____ # of extension activities</p> <p>____ # of community people reached through extension activities (career days, class room presentations, tours, open houses)</p> <p>Website updated during reporting year ____ Yes, ____ No</p> <p>SFMP and other information circulating to the public in the last year (news release/leaflet/open house etc.) ____ Yes, ____ No</p> <p>Number of written requests for communication _____</p> <p>Number of responses sent out by licensees _____</p> <p>Average timeline for response _____</p>

Appendix 2 – SFM Plan Reporting Format

Tar #	Monitoring parameter	Monitoring results
29	<p><b>Monitoring/Reporting:</b> Licensees will report and provide detail regarding local business initiatives and partnerships</p>	<p>List and provide detail regarding local business initiatives and partnerships</p> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>
30	<p><b>Monitoring/Reporting:</b> Licensees will report the number of First Nation written comments specifically related to Forest Development Plan/Forest Stewardship Plan responded to, compared to the number of First Nations written comments received-in the reporting year that need a response.</p>	<p>____ # of First Nations comments related to FDPs /FSPs requiring a response</p> <p>____ # of Licensee responses to First Nations comments requiring a response</p>

Appendix 2 – SFM Plan Reporting Format

Tar #	Monitoring parameter	Monitoring results
31	<p><b>Monitoring/Reporting:</b> Licensees will report the number of stakeholder and public written comments specifically related to Forest Development Plan/Forest Stewardship Plan referral that need a response, as compared to the number of Forest Development Plan consultation-comments responded to by licensees during the reporting year.</p> <p>The Small Scale Salvage Program will report on the number of stakeholder and public comments that were reflected in the licence document and the number of stakeholder and public commitments subsequently achieved on the ground.</p>	<p>___ # of stakeholder/ public comments related to FDPs /FSPs requiring a response</p> <p>___ # of Licensee responses to stakeholder/ public comments requiring a response</p> <p><b><i>Small Scale Salvage Program</i></b></p> <p>___ # of stakeholder/ public comments reflected in the Licence document</p> <p>___ # of stakeholder/ public commitments achieved on the ground</p>
32	<p><b>Monitoring/Reporting:</b> Licensees will report the average time (months), for road cut and fill slope seeding application, completed during the reporting year on newly constructed roads.</p>	<p>___ total km of road grass seeded</p> <p>___ average months for grass seed application</p>
33	<p><b>Monitoring/Reporting:</b></p> <p>Licensees report the current number of hectares maintained as Protected Areas as last reported by a Timber Supply Review.</p> <p>Licensees report the total area of draft OGMA’s within their operating area and the area of net OGMA reduction as a result of their operations.</p>	<p>Number of hectares maintained as Protected Areas (data to come from current TSR).</p> <p>___ ha Total area of draft OGMA’s within Operating Area</p> <p>___ ha Net OGMA reduction as a result of operations</p>

*Appendix 2 – SFM Plan Reporting Format*

Tar #	Monitoring parameter	Monitoring results
34	<p><b>Monitoring/Reporting:</b> Licensee report the current age class distribution on as last reported by a Timber Supply Review</p>	Age class as percent of timber harvesting land base (data to come from current TSR).
35	<p><b>Monitoring/Reporting:</b> Survey responses coded 1 (poor), 2, 3 (satisfactory), 4, 5 (well done), and averaged.  Results of feedback form compiled and reported, including any written comments, as part of annual monitoring program.</p>	<p>Response average ____  Results of feedback form compiled and reported ____ yes ____ no</p>
36	<p><b>Monitoring/Reporting:</b> Licensee report the current MAI as last reported by a Timber Supply Review</p>	Current MAI in m <sup>3</sup> /ha/yr (data to come from current TSR).



# **Appendix 3**

## **Summary of Publicly Developed Values, Objectives and Indicators**



*Appendix 3 – Summary of Publicly Developed Values, Objectives and Indicators*

**CCFM CRITERION: 1) Conservation of Biological Diversity**

ELEMENT	VALUE	OBJECTIVE	INDICATOR
<p><b>1.1 Ecosystem Diversity</b> Conserve ecosystem diversity at the landscape level by maintaining the variety of communities and ecosystems that naturally occur in the DFA.</p>	<p>Functioning ecosystems that support natural processes</p>	<p>Functional ecosystems including:</p> <ul style="list-style-type: none"> <li>- representation of natural attributes</li> <li>- maintenance of a full range of seral stage distribution</li> <li>- maintenance of a full range of habitat</li> <li>- retention of vertical structure for stand level attributes</li> </ul>	<p>2. Level of conformance to riparian management area commitments contained within licensee plans. 3. Percent of harvested blocks greater than 5 hectares that have individual wildlife tree/stubs and/or associated wildlife tree patches. 33. Protected Ecosystems 34. Forest age class distribution</p>
<p><b>1.2) Species Diversity</b> Conserve species diversity by ensuring that habitats for the native species found in the DFA are maintained through time.</p>	<p>Sustainable populations of flora and fauna native to the DFA and the abundance and distribution of species within their natural range of variation</p>	<p>Species native to the DFA are maintained at sustainable and balanced levels</p>	<p>2. Level of conformance to riparian management area commitments contained within licensee plans. 5. Percent of harvested areas that are regenerated to species ecologically suited to the site. 6. Degree of protection given to Identified Wildlife. 7. Percent of harvested cutblocks within the mule deer winter range that are managed consistent with the Merritt TSA Mule Deer Strategy</p>

**CCFM CRITERION: 1) Conservation of Biological Diversity**

ELEMENT	VALUE	OBJECTIVE	INDICATOR
<p><b>1.3) Genetic diversity</b> Conserve genetic diversity by maintaining the variation of genes within species.</p>	<ul style="list-style-type: none"> <li>▪ Genetic diversity within all native species</li> <li>▪ Genetic diversity conserved without the use of biological /genetic engineering</li> </ul>	<ul style="list-style-type: none"> <li>▪ Maintain genetic diversity of all species native to the DFA</li> </ul>	<p>2. Level of conformance to riparian management area commitments contained within licensee plans.</p> <p>6. Degree of protection given to Identified Wildlife.</p> <p>8. Percent of areas revegetated with grass seed that is “graded acceptable”.</p>
<p><b>1.4 Protected Areas and Sites of Special Biological Significance</b> Respect protected areas identified through government processes. Identify sites of special biological significance within the DFA and implement management strategies appropriate to their long-term maintenance.</p>	<p>Natural functioning ecosystems</p> <p>Rare physical environments</p>	<p>Maintenance of representative natural, and rare, functioning ecosystems</p>	<p>7. Percent of harvested cutblocks within the mule deer winter range that are managed consistent with the Merritt TSA Mule Deer Strategy.</p> <p>33. Protected Ecosystems</p>

*Appendix 3 – Summary of Publicly Developed Values, Objectives and Indicators*

**CCFM CRITERION: 2) Maintenance and Enhancement of Forest Ecosystem Condition and Productivity**

ELEMENT	VALUE	OBJECTIVE	INDICATOR
<p><b>2.1) Forest Ecosystem Resilience</b></p> <p>Conserve ecosystem resilience by maintaining both ecosystem processes and ecosystem conditions.</p>	<ul style="list-style-type: none"> <li>▪ Resilient forest ecosystems</li> </ul>	<ul style="list-style-type: none"> <li>▪ Forest management does not compromise forest ecosystem resilience</li> </ul>	<p>3. Percent of harvested blocks greater than 5 hectares that have individual wildlife tree/stubs and/or associated wildlife tree patches.</p> <p>5. Percent of harvested areas that are regenerated to species ecologically suited to the site.</p> <p>9. Percent of harvest priorities, related to catastrophic forest health events (e.g. mountain pine beetle), completed prior to critical time frame.</p>
<p><b>2.2) Forest Ecosystem Productivity</b></p> <p>Conserve forest ecosystem productivity and productive capacity by maintaining ecosystem conditions that are capable of supporting naturally occurring species.</p>	<p>Productive, well-functioning forest ecosystem</p>	<p>Forest ecosystems that support a full range of values</p>	<p>3. Percent of harvested blocks greater than 5 hectares that have individual wildlife tree/stubs and/or associated wildlife tree patches.</p> <p>10. Percentage of cutblock area that meets free growing requirements on or before the latest date.</p> <p>36. Mean Annual Increment</p>

*Appendix 3 – Summary of Publicly Developed Values, Objectives and Indicators*

**CCFM CRITERION: 3) Conservation of Soil and Water Resources**

ELEMENT	VALUE	OBJECTIVE	INDICATOR
<p><b>3.1) Soil Quality and Quantity</b></p> <p>Conserve soil resources by maintaining soil quality and quantity.</p>	<p>Soil productivity</p>	<p>Soil qualities that sustain forest ecosystem productivity</p>	<p>12. Annual percent of cutblock areas in permanent access structures (e.g. roads, landings).</p> <p>13. Level of conformance to soil conservation commitments contained within licensee plans.</p> <p>14. Number of operationally caused slides occurring as a result of failure to perform a terrain assessment or to follow the recommendations within a completed assessment.</p>
<p><b>3.2 Water Quality and Quantity</b></p> <p>Conserve water resources by maintaining water quality and quantity.</p>	<ul style="list-style-type: none"> <li>▪ Clean drinking water</li> <li>▪ Naturally functioning watersheds</li> <li>▪ Water quality and quantity</li> <li>▪ Integrity of soil and water systems</li> </ul>	<ul style="list-style-type: none"> <li>▪ Watersheds that function within the natural range of variability</li> <li>▪ Water quality and quantity that maintains existing uses and supports communities (human and ecological) and aquatic life</li> </ul>	<p>2. Level of conformance to riparian management area commitments contained within licensee plans.</p> <p>15. Percent of watershed that is equivalent clear cut area (ECA).</p> <p>16. Percent of permanent status roads that have inspections and related maintenance completed as per programs.</p> <p>32. Amount of time for road cut and fill slope grass seeding application.</p>

**CCFM CRITERION: 4) Forest Ecosystem Contributions to Global Ecological Cycles**

ELEMENT	VALUE	OBJECTIVE	INDICATOR
<p><b>4.1 Carbon Uptake and Storage</b></p> <p>Maintain the processes that take carbon from the atmosphere and store it in forest ecosystems.4.1</p>	<p>Well-functioning ecosystems</p>	<p>Conduct forest activities to maintain ecological processes that facilitate carbon uptake and storage.</p>	<p>9. Percent of harvest priorities, related to catastrophic forest health events (e.g. mountain pine beetle), completed prior to critical time frame.</p> <p>10. Percentage of cutblock area that meets free growing requirements on or before the latest date.</p> <p>11. Area of cutblocks that outperformed late free growing requirements in that year.</p> <p>34. Forest age class distribution</p> <p>36. Mean Annual Increment</p>
<p><b>4.2 Forest Land Conversion</b></p> <p>Protect forestlands from deforestation or conversion to non-forests.</p>	<p>Forest land base maintained for forest uses</p>	<p>Maintenance of a healthy, productive forest land base</p>	<p>12. Annual percent of cutblock areas in permanent access structures (e.g. roads, landings).</p> <p>17. Percent of area prescribed for planting that is completed before or during the third growing season. -Percent of natural regeneration area meeting natural regeneration delay.</p> <p>18. Annual harvest level as a percent of annual allocation.</p>

*Appendix 3 – Summary of Publicly Developed Values, Objectives and Indicators*

**CCFM CRITERION: 5) Multiple Benefits to Society**

ELEMENT	VALUE	OBJECTIVE	INDICATOR
<p><b>5.1 Timber and Non-Timber Benefits</b></p> <p>Manage the forest sustainably to produce an acceptable and feasible mix of both timber and non-timber benefits.</p>	<ul style="list-style-type: none"> <li>▪ Forests contribute to the quality of life</li> </ul>	<ul style="list-style-type: none"> <li>▪ Opportunity and access to the forest resource for a variety of uses</li> </ul>	<p>16. Percent of permanent status roads that have inspections and related maintenance completed as per programs.</p> <p>21. Conformance with plan commitments related to lakeshore guidelines.</p> <p>22. Percent of cutblocks in known scenic areas with visual impact assessments completed.</p> <p>23. Number of forest development plan/forest stewardship plan meetings.</p> <p>31. Number of written comments from stakeholders and public related to the Forest Development Plan/Forest Stewardship Plan proposals and the number of responses.</p>
<p><b>5.2 Communities and Sustainability</b></p> <p>Contribute to the sustainability of communities by providing diverse opportunities to derive benefits from forests and to participate in their use and management.</p>	<p>Sustained multiple benefits from our forests.</p>	<p>Productive forest resource maintaining a continual and balanced flow of benefits.</p>	<p>18. Annual harvest level as a percent of annual allocation.</p> <p>20. Operating level of timber processing facilities.</p> <p>25. Number of First Nations consultation meetings attended related to Forest Development Plan/Forest Stewardship Plan..</p> <p>26. First Nations involvement in Nicola Similkameen Innovative Forestry Society (NSIFS).</p> <p>29. Number of business initiatives and partnerships.</p> <p>30. Number of written comments from First Nations related to Forest Development Plan/Forest Stewardship Plan proposals and the number of responses.</p> <p>31. Number of written comments from stakeholders and public related to the Forest Development Plan/Forest Stewardship Plan proposals and the number of responses.</p>
<p><b>5.3 Fair Distribution of Benefits and Costs</b></p> <p>Promote the fair distribution of timber and non-timber benefits and costs.</p>	<p>Economic benefits to society</p>	<p>A prosperous forest-based economy with a sustainable supply of forest resources</p>	<p>19. Total output of forest products (lumber, chips and other) from sawmills within the TSA.</p> <p>20. Operating level of timber processing facilities.</p> <p>29. Number of business initiatives and partnerships.</p>

*Appendix 3 – Summary of Publicly Developed Values, Objectives and Indicators*

**CCFM CRITERION: 6) Accepting Society’s Responsibility for Sustainable Development**

ELEMENT	VALUE	OBJECTIVE	INDICATOR
<p><b>6.1 Aboriginal and Treaty Rights</b></p> <p>Recognize and respect Aboriginal and treaty rights.</p>	<ul style="list-style-type: none"> <li>▪ Aboriginal and treaty rights</li> </ul>	<ul style="list-style-type: none"> <li>▪ Meaningful participation by First Nations in forest management planning</li> </ul>	<p>4. Percent of First Nation commitments addressed.</p> <p>25. Number of First Nations consultation meetings attended related to Forest Development Plan/Forest Stewardship Plan.</p> <p>30. Number of written comments from First Nations related to Forest Development Plan/Forest Stewardship Plan proposals and the number of responses.</p>
<p><b>6.2 Respect for Aboriginal Forest Values, Knowledge, and Uses</b></p> <p>Respect traditional Aboriginal forest values and uses identified through the Aboriginal input process.</p>	<ul style="list-style-type: none"> <li>▪ Respect for Aboriginal interests and values</li> </ul>	<ul style="list-style-type: none"> <li>▪ Interests and values of First Nations accommodated in forest management decisions</li> </ul>	<p>4. Percent of First Nation commitments addressed.</p> <p>25. Number of First Nations consultation meetings attended related to Forest Development Plan/Forest Stewardship Plan.</p> <p>26. First Nations involvement in Nicola Similkameen Innovative Forestry Society (NSIFS).</p> <p>30. Number of written comments from First Nations related to Forest Development Plan/Forest Stewardship Plan proposals and the number of responses.</p>
<p><b>6.3 Public Participation</b></p> <p>Demonstrate that the SFM public participation process is designed and functioning to the satisfaction of the participants.</p>	<p>Shared knowledge and informed decisions.</p>	<p>SFMP public participation process is guided by informed, inclusive, fair and open consultation.</p>	<p>24. Maintain an SFM Advisory Group.</p> <p>27. Maintain number of extension activities offered to reach individuals.</p> <p>35. Advisory Group Participant Satisfaction Survey</p>

**CCFM CRITERION: 6) Accepting Society’s Responsibility for Sustainable Development**

ELEMENT	VALUE	OBJECTIVE	INDICATOR
<p><b>6.4 Information for Decision-Making</b></p> <p>Provide relevant information to interested parties to support their involvement in the public participation process, and increase knowledge of ecosystem processes and human interactions with forest ecosystems.</p>	<p>Shared knowledge and informed decision-making</p>	<p>Adaptive forest management that is responsive to research, experience and public input</p>	<p>24. Maintain an SFM Advisory Group.</p> <p>27. Maintain number of extension activities offered to reach individuals.</p> <p>35. Advisory Group Participant Satisfaction Survey</p>

# **Appendix 4**

## **Parking Lot**



## **Introduction**

This Appendix, referred to as a Parking Lot, is included in the SFMP to retain improvement ideas. The Parking lot is used to retain and track ideas that time or other constraints precluded immediate attention to. Parking lot items are addressed as part of regular SFMP review with the objective of determining appropriate action (i.e. retain in parking lot, no longer applicable, addressed, develop action plan, action, etc).

### **Parking Lot**

Currently, there are no improvement ideas/ opportunities in the Parking Lot.



# **Appendix 5**

## **List of Species at Risk**



**SPECIES AT RISK (MERRITT T.S.A)**

<b><u>English Name</u></b>	<b><u>Cosewic Status</u></b>
Badger	Endangered (May 2000)
Burrowing Owl	Endangered (May 2000)
Coastal Tailed Frog	Special Concern (May 2000)
Columbia Mottled Sculpin	Special Concern (May 2000)
Ferruginous Hawk	Special Concern (1995)
Flammulated Owl	Special Concern (Nov 2001)
Fringed Myotis	Special Concern (2002)
Gopher Snake	Threatened (May 2002)
Great Basin Spadefoot	Threatened (November 2001)
Great Blue Heron	Special Concern (2002)
Grizzly Bear	Special Concern (May 2002)
Interior Western Screech Owl	Endangered (May 2002)
Lewis' Woodpecker	Special Concern (November 2001)
Long-billed Curlew	Special Concern (November 2001)
Monarch	Special Concern (November 2001)
Mountain Beaver	Special Concern (November 2001)
Rubber Boa	Special Concern (May 2003)
Short Eared Owl	Special Concern (1994)
Spotted Bat	Special Concern (May 2004)
Spotted Owl	Endangered (2002)
Umatilla Dace	Special Concern (1988)
Western Harvest Mouse	Special Concern (1994)
Western Rattlesnake	Threatened (May 2004)

*Appendix 5 – Species at Risk*

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Western Skink	Special Concern (May 2002)
White-headed Woodpecker	Endangered (November 2002)
Wolverine ( <i>western population only</i> )	Special Concern (2003)
Yellow-breasted Chat	Threatened to Endangered (2002)
<b>TOTAL:</b>	<b><u>27</u></b>