

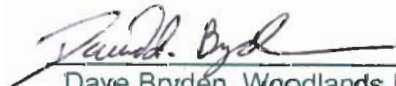
CSA – SFM SUSTAINABLE FOREST MANAGEMENT PLAN 2008

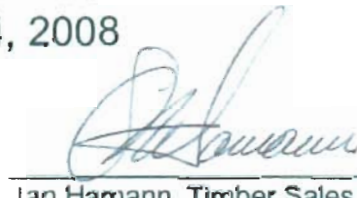
Canadian Forest Products Ltd.
Prince George Operations

&

BC Timber Sales
Prince George Business Area

TFL30 DFA
February 4, 2008


Dave Bryden, Woodlands Manager


Ian Hamann, Timber Sales Manager



Canadian Forest Products Ltd.
Prince George Operations
Prince George, BC
V2L 4W2



BC Timber Sales
Prince George Business Area
Prince George, BC
V2N 4W5

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EXECUTIVE SUMMARY

This Sustainable Forest Management Plan (SFM Plan) is the combined effort of Canadian Forest Products Ltd. (Canfor) and BC Timber Sales (BCTS) to achieve Canadian Standards Association (CSA) certification to the CSA Z809-02 standard.

Canfor and BCTS support business practices that protect and enhance the environment for the use of current and future generations. They are committed to the goals of sustainable forest management and to a process that will continually improve their environmental performance. To achieve these objectives the signatories will:

- Develop and maintain a scientifically credible, structured, yet flexible framework for SFM at the management unit level that incorporates strategic level requirements.
- Manage all operations to comply with or exceed all legal requirements.
- Encourage local First Nations to become involved in the development of local SFM Plans, while respecting their rights and interests.
- Provide opportunities for communities, environmental groups and scientists to participate in planning and implementation in ways that reflect their interests and concerns efficiently in both time and cost and in ways that are effective for both stakeholders and resource managers.
- Identify, evaluate and control potential environmental risks and implement appropriate preventative measures.
- Communicate, inform, and promote awareness regarding environmental activities with employees, First Nations, and stakeholders.
- Develop and maintain a monitoring program accompanied by evaluation and reporting of findings and feedback into decision making that is designed to evaluate and report on the measures of sustainability of social, ecological, and economic values.
- Commit timely audits of environmental management systems and SFM parameters, and implement corrective measures as required.

The success of the TFL30 Sustainable Forest Management Plan is dependent upon the commitment of Canfor and BCTS to meet these objectives.

Canfor and BC Timber Sales wish to express its appreciation and gratitude to the individual members and community organizations that participated in the CSA – SFM Certification TFL 30 Public Advisory Group. Their active involvement and commitment throughout the entire CSA Certification process provided valuable input and insights into the development of the TFL 30 CSA Certification Values, Objectives, Indicators and Targets that are being used as the basis for developing the enclosed Sustainable Forest Management Plan.

In addition, Canfor and BC Timber Sales are very grateful to Dwight Scott Wolfe for facilitating the Public Advisory Group process and to Forest Investment Account for providing funding for developing this SFM plan.

1.0 INTRODUCTION

As society has been increasingly affirming the wider set of values that forest ecosystems can provide, the forest industry has witnessed a distinct change in the philosophy of forest management. Though timber may still be the primary economic value from the forests, a wider range of economic, environmental and social values is being demanded. Forest management now involves the sustainable management of a much larger spectrum of values such that the benefits we enjoy from the forests today do not impact on the ability of subsequent generations to enjoy benefits from the forests in the future. The concept of “sustainable forest management”, has gained acceptance at the international, national, and local levels. Furthermore, this concept has attracted the attention of buyers of forest products who are increasingly demanding that the products be derived from forests managed on a sustainable basis. As a result, forest certification has emerged as a dominant factor in the forest industry in order to provide assurances to buyers of wood products that the management of forests meets certain standards considered being critical for sustainable forest management.

Along with the move to Sustainable Forest Management, the principle of ecosystem management is gaining awareness. Ecosystem management is a process that integrates biological, social and economic factors into a comprehensive strategy aimed at protecting and enhancing sustainability, diversity and productivity of our natural resources. As British Columbia forest companies have evolved and have become dependent on the global market place for the export of forest products, the issues of ecosystem management, sustainable forest management and forest certification have become paramount.

Due to the current mountain pine beetle epidemic in the Prince George TSA, harvest priority has shifted to the Prince George and Fort St. James DFA's and harvest activity has been temporarily reduced in TFL30.

1.1 Historical Perspective of Canadian Forest Products

Having originated from a small forest products company on the banks of the Fraser River in New Westminster, B.C., Canfor has emerged as Canada's leading integrated forest products company. With the corporate office located in Vancouver, BC, Canfor directly employs 7,300 people as well as an additional 2,200 contractors.

In 1999, Canfor's acquisition of Northwood resulted in Canfor becoming Canada's largest producer of softwood lumber and Kraft market pulp. As a result of the Northwood purchase, Canfor acquired Northwood Pulp Mill, Prince George Sawmill, North Central Plywood, Rustad, Houston and Upper Fraser operations, the Kyahwood Forest Products Joint Venture and the J.D. Little Forest Centre. The purchase of Northwood was significant to the Sustainable Forest Management Plan as it also marked the acquisition of Tree Farm License 30 (TFL 30). With specific regard to TFL 30, the day-to-day management is administered from Prince George by Prince George woodlands operations. Tree Farm Licence 30 (TFL30) is the only area-based tenure managed by the Prince George operation and represents approximately 5 % of the annual wood volume currently managed from Prince George.

In 2004, Canfor acquired Slocan Forest Products, increasing the company's production to over 5 billion board feet per year.

Canfor continued to grow in 2006, by acquiring New South Companies inc., consisting of three sawmills, one remanufacturing facility and two lumber treatment plants in North and South Carolina. In addition in 2006, Canfor transferred its Englewood Logging operation, including Tree Farm Licence 37 to Western Forest Products and announced its intentions to create a Pulp Income Trust of its three Prince George pulp operations.

Being one of Canada's largest softwood lumber producers, Canfor heavily relies on export markets throughout North America and overseas to sell its lumber products. With the emerging trends of sustainable development and sustainable forest management, markets have also started demanding that forest companies be responsive to these emerging global trends. As a result, in July 1999 Canfor committed to achieving forest certification throughout all its forest operations as a means to demonstrate its commitment to sustainable forest management.

1.2 Canfor Corporate Policies and Objectives

As a result of the changing emphasis of forestry, Canfor has aligned its corporate mandate, policies and principles to be responsive to a shift in social priorities and values that reflect sustainable forest management and responsible forest stewardship.

1.2.1 Company Policies

In the past few years, Canfor has released a number of public statements that define the mission, vision, policies and guiding principles for the company. They include ***Canfor's Mission Statement***, ***Environment Policy*** and ***Forestry Principles***. As a result, Canfor is committed to the continual improvement in implementing the plan under the principles of adaptive management. These commitments are being used to guide the development of this Sustainable Forest Management Plan for TFL 30.

Canfor's Mission

We will be a highly successful competitor in the global forest products industry, managing with integrity the resources entrusted to our care.


We will be characterised by:

- Employing and developing highly motivated, empowered and committed people who enjoy their work.
- Consistently satisfying customer needs with quality products and services
- Enhancing the forest resource, ensuring responsible stewardship of the environment, and protecting human health and safety.

- Encouraging, recognising and rewarding excellence in all our endeavours, with an emphasis on innovation and results.
- Increasing value for shareholders.

We will be guided by the core values of integrity, trust, openness and respect for people.

Figure 1. Canfor's Mission Statement



Environment Policy

We are committed to responsible stewardship of the environment throughout our operations.

We will:

- Comply with or surpass legal requirements.
- Comply with other environmental requirements to which the company is committed.
- Set and review objectives and targets to prevent pollution and to continually improve our sustainable forest management and environmental performance.
- Provide opportunities for interested parties to have input to our sustainable forest management planning activities.
- Promote environmental awareness throughout our operations.
- Conduct regular audits of our forest and environmental management system.
- Communicate our sustainable forest management and environmental performance to our Board of Directors, shareholders, employees, customers and other interested parties.

February 2005

Figure 2. Canfor's Environmental Policy

CANFOR'S FORESTRY PRINCIPLES

Ecosystem Management
We will use the best available science to develop an understanding of ecological responses to natural and human-caused disturbances. We will incorporate this knowledge into higher level and operational plans by applying ecosystem management principles to achieve desired future forest conditions.

Scale
We will define objectives over a variety of time intervals (temporal scales), and at spatial scales of stand, landscape and forest.

Adaptive Management
We will use adaptive management to continually improve forest ecosystem management. This will require the development and implementation of collaborative research and monitoring programs.

Old Growth
We will include old growth and old growth attributes as part of our management strategies and philosophy in the forests where we operate.

Timber Resource

Canfor will ensure a continuous supply of affordable timber in order to carry out its business of harvesting, manufacturing and marketing forest products. Canfor will strive to maximize the net value of the fibre extracted for sustained economic benefits for employees, communities and shareholders.

Forest Land Base

We advocate the maintenance of the forest land base as an asset for the future.

Health and Safety

We will operate in a manner that protects human health and safety.

Aboriginal Peoples

We will pursue business partnerships and co-operative working arrangements with aboriginal people to provide mutual social, cultural and economic benefits and address mutual interests.

Communities

We will engage members of the public, communities and other stakeholders in the delivery of the Forestry Principles. The process will be open, transparent and accountable.

Accountability

We will be accountable to the public for managing the forest to achieve present and future values. We will use credible, internationally recognized, third party verification of our forestry operations as one way of demonstrating our performance.

Figure 3. Canfor's Forestry Principles

Through our commitment to SFM and Forestry Principles, we are also committed to respecting Aboriginal and treaty rights and to providing opportunities for interested Aboriginal Peoples to have input to our sustainable forest management planning activities.

1.2.2 Corporate Objectives

Canfor's objectives include:

- Canfor's management goals for TFL 30 reflect our strong commitment to our employees, shareholders, community, and the environment.
- We provide attractive investment returns to our shareholders. Our overall business strategy is to maximize profitability by reducing costs, improving efficiencies, developing new market opportunities, and merchandising products according to our customers' specific needs.
- We maintain a stable employment base and contribute to the development of our local communities.
- We protect existing forest values as we grow our future forests to sustain a maximum supply of quality timber to processing facilities in British Columbia.
- When developing longer-term management strategies and shorter-term operational plans, we balance economic, social and environmental objectives.
- We will ensure a continuous supply of affordable timber in order to carry out our business of harvesting, manufacturing and marketing forest products.
- We will strive to maximize the net value of the fibre extracted for sustained economic benefits for employees, communities and shareholders.
- We will seek and maintain certification under the International Organization for Standardization, Environmental Management System Standard (ISO 14001), and Canadian Standards Association Sustainable Forest Management System Standard (CAN/CSA-Z809-02).

1.3 BC Timber Sales, Prince George Business Area Corporate Policies and Objectives

BC Timber Sales is an independent organization within the B.C. Ministry of Forests and Range created to develop Crown timber for auction to establish market price and capture the value of the asset for the public. The vision of BC Timber Sales is to be "An effective timber marketer generating wealth through sustainable resource management".

BC Timber Sales has 12 Business Areas and an operational presence in 33 locations across BC. The organization currently manages 13 percent of the provincial annual cut, with its share increasing to approximately 20% in the 2006/07 fiscal year following the conclusion of the timber reallocation initiative. Included in the annual cut is an allocation for volume on TFL30 (21,312 cubic meters per year). This volume is administered through BC Timber Sales out of the Timber Sales Office located in Prince George.

BC Timber Sales is committed to certification of its operations. Recent efforts has resulted in certification of operations in both the Prince George and Kamloops business areas to the CAN CSA Z809-02 SFM standard.

For the Prince George Business area, BC Timber Sales has two SFM policies: i) an Environmental Policy and ii) a Sustainable Resource Management Policy. They are as follows:

Environmental Policy (August, 2005)

It is the policy of BC Timber Sales to:

- Comply with all relevant environmental legislation and regulations.
- Strive for excellence in forest management by continually improving the performance of resource management activities and practices.
- Maintain a framework that sets and reviews environmental objectives and targets and promotes the prevention of pollution associated with BC Timber Sales forestry activities.
- Monitor and evaluate key BC Timber Sales forestry operations.
- Communicate BC Timber Sales business activities and policies to all staff and make them available to the public.

BC Timber Sales is committed to managing and administering forest management activities on our operations through effective measures that ensure sustainable resource management.

Sustainable Resource Management Policy (October, 2005)

It is the policy of BC Timber Sales to:

- Conduct our forest management activities to comply with relevant legislation, regulations, policies and other requirements to which the organization subscribes;
- Develop and maintain a Sustainable Forest Management (SFM) system that is based on sound ecological, social, and economic values;
- Provide public participation opportunities to facilitate local input into forest management activities and plans.
- Provide the opportunity to First Nations to participate in the SFM process in a manner that respects their aboriginal and treaty rights;
- Maintain a framework that sets and reviews environmental and SFM objectives and targets, and promotes the prevention of pollution associated with our forest management activities;
- Monitor, evaluate, and implement appropriate changes to promote continual improvement of environmental and SFM practices;
- Seek to advance our knowledge of SFM science and technology and incorporate relevant measures into our overall planning process;
- Promote a work environment that protects the health and safety of staff, clients, and the public;
- Communicate and make readily available our Sustainable Resource Management Policy statements to staff, clients, First Nations, and the public

1.4 CSA – SFM Certification

In keeping aligned with its corporate policies and objectives, Canfor initiated the process toward obtaining forest certification for TFL30 under the Canadian Standards Association Sustainable Forest Management certification (CSA-Z809-96) in early 2000. In October 2005, Canfor started the process to move over to the updated Canadian Standards Association Sustainable Forest Management certification standard (CSA-Z809-02).

The Canadian Standards Association (CSA) is the official standards setting body for Canada. In 2002 they updated their Sustainable Forest Management standard based on a comprehensive set of internationally recognised sustainable forestry criteria. The CSA standard includes an environmental management system component consistent with the ISO 14001 standard and a performance component based on criteria and critical elements of sustainable forest management. It also includes public participation that involves a broad range of stakeholders with an interest in the forest area.

The following points capture the general steps involved in the CSA-SFM process.

- Values, Objectives, Indicators and Targets are identified through public process and provincial regulations.
- Future forecasts are done for indicators based on a few forest management scenarios
- An SFM Plan is created for the Defined Forest Area
- Indicator performance is monitored over time, and
- Adjustments are made to ensure the objectives are met.

This certification includes both a process (systems) component and performance (on-the -ground) measures and this Sustainable Forest Management Plan is an integral component of the requirements for CSA-SFM certification of TFL 30. The process is based on the concept of continual improvement through and adaptive management process.

1.4.1 Public Participation

Public participation is one of the primary highlights of the CSA-SFM certification process. A main instrument for public participation is the formation of the Public Advisory Group (PAG). The PAG is fundamental with regards to providing input, evaluation and feedback into the various processes of SFM certification; from the selection of indicators in the initial stages through to the continual involvement in providing important evaluation and feedback as the process evolves.

1.5 Linkages to Environmental Management Systems registration (ISO 14001 EMS)

As Canfor and BC Timber Sales have obtained registration under the ISO 14001 environmental management system (EMS), there are many functional linkages with this CSA-SFM certification. The primary linkage between the ISO-EMS and CSA-SFM certification will be in the areas of tracking, monitoring and reporting of performance (i.e. measuring performance against the objectives derived from the CSA-SFM certification process).

More specifically, the indicators and management objectives derived from the CSA-SFM certification process will be included in the EMS Annual Environmental Programs. Subsequently, the management objectives and targets (where applicable) will be entered into the Canfor and BC Timber Sales' EMS incident tracking system. This database system automatically informs, people that they have been assigned tasks necessary to complete certain actions and will continually send reminders until the action is completed. The progress of meeting the management objectives and targets is reviewed monthly, and the entire EMS is subject to a third-party audit annually.

1.6 Overview of the SFM Plan

The primary purpose of this SFM Plan is to outline how Canfor and BC Timber Sales will manage Tree Farm Licence 30 for a sustainable flow of environmental, social and economic values to meet the needs of present and future generations. While this SFM Plan is a requirement for CSA-SFM certification, it also follows Canfor's objective of "enhancing the forest resource, ensuring responsible stewardship of the environment, and protecting human health and safety" (see Figure 1: "Canfor's Mission Statement"). In doing so, this SFM plan first provides a detailed description of the Defined Forest Area (DFA) of TFL30 that includes the geographical extent, a historical account of the TFL amalgamation, which resulted in TFL 30, and the land tenure arrangement. Also included is an overview of current forest management practices, current forest management planning, and enhanced forest management planning (which includes CSA-SFM certification).

The following section of the plan continues by outlining the local level indicators that have been selected to assess SFM using the CSA-SFM certification. A detailed description is provided for each indicator with respect to the management objective, what the indicator is meant to tell us, and how it relates to SFM (i.e. through the CSA-CCFM Criteria and Critical Elements). Furthermore, monitoring and reporting details are outlined for each indicator, which include the data requirements/considerations, the roles and responsibilities required at each stage of the indicator monitoring procedure, the implementation schedule, and targets that are related to the management objectives (if applicable).

The final section of this SFM plan outlines the formal process of adaptive management that will occur as part of the SFM of TFL 30. The development, forecasting and monitoring of SFM indicators is an integral component of the adaptive management process that provides a dynamic improvement framework for sustainable forest management.

1.7 Memorandum of Understanding

Canfor and BC Timber Sales have developed a Memorandum of Understanding (MOU), which outlines how they are going to work together in developing the Sustainable Forest Management Plan (SFMP) for TFL30. Participation in the development of the TFL30 SFM Plan requires Canfor and BC Timber Sales to work within a public process to jointly develop SFM indicators and targets. Canfor and BC Timber Sales will use the SFM indicators and targets to monitor progress, publicly report, and promote continuous improvement of the TFL30 SFM Plan as agreed to in the signed MOU.

As stated in the MOU, Canfor and BC Timber Sales agree to the following goals:

1. To jointly develop an SFM Plan covering the geographic area of TFL30 that meets the requirements of the CSA SFM standard (Z809-02).
2. To work together over the term of the plan to fulfill the TFL30 SFM Plan commitments including, data collection and monitoring, participating in public processes, producing public reports, and continuous improvement.

Canfor and BC Timber Sales have existing initiatives that will contribute to the overall SFM strategy. These include existing management systems such as ISO 14001 Environmental Management Systems, standard operating procedures, and internal policies. These will have to be re-examined to ensure they are compatible with the procedures outlined in this SFM Plan.

2.0 THE DEFINED FOREST AREA

2.1 Description of Tree Farm Licence 30

TFL 30 is located just northeast of Prince George in the Prince George Forest District (Figure 5). The TFL stretches from its western boundary near Summit Lake on Highway 97, eastward across the western foothills of the Rocky Mountains to slightly Northeast of Sinclair Mills. The total land base for TFL 30 is 182,298 hectares, with a productive forest land base of 159,385 hectares or about 87 % of the total area.

TFL 30 consists of Provincial Crown Land (Schedule B Lands) and lands owned by Canfor (Schedule A lands). Other ownership statuses also exist within the boundaries of TFL 30.

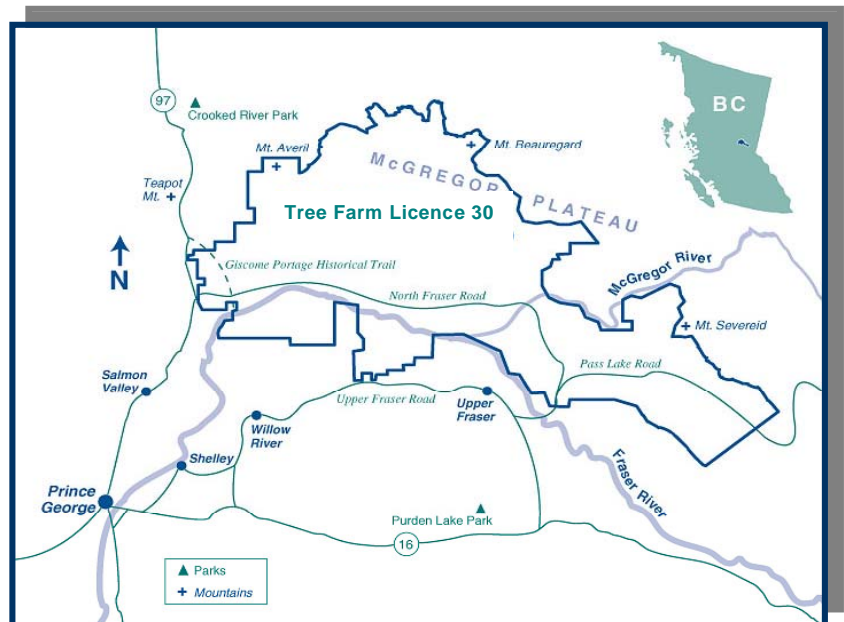


Figure 4. Location map for the Defined Forest Area (TFL 30)

| Ownership Status | Area (ha) | Area (%) |
|---------------------------|-----------|----------|
| Parks (Giscome trail) | 93 | 0.05 |
| Schedule A | 410 | 0.23 |
| Schedule B | 181,366 | 99.48 |
| Private Land (non-Canfor) | 429 | 0.24 |
| Total | 182,298 | 100 |

The total landbase includes a very small portion of private land (429 ha) held by a number of private individuals. Since Canfor and BC Timber Sales do not have management responsibility on these 429ha of private land, they have been removed from the DFA. Therefore the size of the DFA is 181,869ha.

Forests in the area consist of spruce, balsam, Lodgepole pine, Douglas fir, cedar, hemlock and deciduous species.

2.2 Management Responsibility

It is recognized that Canfor and BC Timber Sales are not the only operator with management responsibility within the DFA. The British Columbia Ministry of Forests and Range (MoFR) has the overall authority for the approval of Canfor and BC Timber Sales' operational plans within the DFA, and to monitor Canfor and BC Timber Sales' compliance with the Forest and Range Practices Act of British Columbia. In addition, the MoFR is responsible for managing a number of campsites within the DFA. The Ministry of Environment (MoE) is responsible for developing and adhering to park management plans for those parks included within the DFA.

The MoFR, BC Timber Sales program (previously Small Business Forest Enterprise Program) carries out timber harvesting and forest renewal activities within the DFA, accounting for approximately 11% of the allowable annual cut or 21,312 m3 annually. BC Timber Sales' activities are required to be carried out in conformance with Canfor's forest Management Plan 9 (MP9) and the requirements contained in the SFM plan. Canfor has entered into an agreement regarding roles and responsibilities and data sharing. Significant variations from SFM plan objectives will be reported to the public and government through an annual report. BC Timber Sales staff are regular participants in the TFL30 Public Advisory Group and are aware of the objectives of the SFM plan.

2.3 History of the Defined Forest Area (TFL30)

Tree Farm Licence 30 is an amalgamation of five smaller TFL's that were originally granted in 1959 to the following companies: i) TFL 28: Shelley Development Ltd., ii) TFL 29: Eagle Lake Sawmills Ltd., iii) TFL 30: Sinclair Spruce Lumber Co. Ltd., iv) TFL 31: Upper Fraser Spruce Mills Ltd. and v) TFL 34: Church Sawmill Ltd.

Subsequent corporate acquisitions during the 1960's resulted in combining these TFL's into the present-day TFL 30. The chronology of events were:

- **1960:** Midway Terminals (later National Forest Products) purchased Sinclair Spruce Lumber Co. Ltd. and Upper Fraser Spruce Mills Ltd.
- **1961:** Noranda Mines Ltd. purchased Sinclair and Upper Fraser in addition to other National Forest Products' holdings in southern British Columbia and formed a new company called Northwood Mills Ltd.
- **1963:** Eagle Lake Sawmills Ltd. purchased Shelly Development Ltd.
- **1964:** Northwood Mills combined with Mead Corporation of Dayton Ohio to construct a new pulpmill at Prince George. The name of the new company was changed to Northwood Pulp Limited.
- **1964:** Northwood purchased Church Sawmills Ltd.
- **1966:** Northwood purchased Eagle Lake Sawmills Ltd.

The schedule by which the individual Tree Farm Licences were amalgamated into TFL 30 varied only slightly from the corporate acquisitions. In 1965 TFLs 30, 31 and 34 were consolidated, and in 1967 TFLs 28, 29, and 30 were further consolidated into the present-day TFL 30.

During 1998 Northwood Pulp and Timber Ltd. changed its name to Northwood Inc. During 1999, Canadian Forest Products Ltd. purchased Northwood Inc. There were no changes to the administrative boundaries of TFL 30 as a result of this acquisition.

In 1999, Canfor acquired all shares of Northwood which included Tree Farm licence 30.

2.4 Current and Projected Uses on TFL 30

TFL30 supports a wide variety of resource uses including fibre extraction, recreation, cultural/heritage, trapping and guide/outfitting.

2.4.1 Timber

The previous AAC from Management Plan 9 was approved at 330,000 m³/yr, effective July 1, 2003. However, due to the mountain pine beetle impacts west of TFL30, Canfor has asked and has an approved reduction in the AAC on TFL30. The current AAC for TFL 30 is 201,312 m³/yr, effective January 1, 2003. The Provincial Chief Forester will conduct a determination of a new AAC by December 30, 2008. The current AAC was apportioned accordingly:

- 180,000 m³/yr (89%) Canfor, Schedule B Lands
- 21,312 m³/yr (11%) BC Timber Sales program, Schedule B Lands

SFM indicator forecasting has indicated that the current harvest level 201,312 can be maintained for the short-term (5 years) and then stepping up to 330,000 m³/year after 5 years. The long-range forecast predicts that the AAC will be enhanced to over 500,000 m³/year within 70 years as future managed stands become fully available. The species profile from TFL 30 is dominantly a spruce/balsam mix with minor components of other coniferous species. To date, minor amounts of deciduous species have been utilized from TFL 30. Deciduous species are not managed as a crop tree species but will remain as optional utilization. The majority of the mature deciduous species are contained within high conservation value forests (large reserves) or retained as wildlife trees.

The primary timber demand is for coniferous sawlogs for use as dimension lumber, with residual grades utilized for Kraft pulp. A small percentage of logs meeting peeler/veneer standards are used for plywood.

2.4.2 Recreation / Tourism / Scenery

There is a wide range of recreational opportunities on TFL 30 including hunting, fishing, boating, caving, skiing, snowmobiling, and camping. Commercial tourism activities include five guide/outfitting tenures and boating/rafting on the McGregor and Fraser Rivers.

There are 5 Ministry of Tourism Sport and Arts Campsites located within TFL 30, which include:



- Amanita Lake - 6 km on the Church FSR
- Averil Creek - 53 km on the North Fraser FSR
- Boundary Lake - 43 km on the North Fraser FSR
- Freya Lake - North of the North Fraser FSR
- Pass Lake - 36 km on the Pass Lake FSR

These sites provide two-wheel drive vehicle access and offer camping, boating, picnicking, hiking and fishing experiences.

Woodall and Bear Paw Ridges provide quality backcountry recreational experiences, which include hiking, skiing, snowshoeing, wildlife viewing and hunting. Management of this resource relies on the preservation of natural environments and exclusion of motorized access. To support this objective, large areas in the Woodall / Bear Paw Ridge areas have been designated as high conservation value forests. These include the Woodall recreation emphasis area and high value caribou habitat. Other large reserve areas across the TFL that will supply backcountry experiences are the McGregor River management area, the Horseshoe recreation emphasis area, and the Tri-Lakes Recreation emphasis area. The Woodall recreation emphasis area contains the Farm Trail, which provides hiking access to the sub-alpine and alpine ecosystems. A cabin exists on this trail and is located just outside the TFL boundary. Local recreation user groups maintain both the trail and cabin.



The majority of TFL 30 contains good quality road access, and as such provides ample opportunity for motorised recreational experiences such as day trips for hunting, fishing, snowmobiling, and skiing.

Several local recreation user groups have identified themselves as active users of TFL 30 and include, but are not limited to: UNBC Caving Club, Caledonia Ramblers Hiking Club, McGregor Wilderness Society, and Sons of Norway Ski Club.

To assist in maintaining quality recreational experiences, scenic areas have been designated across TFL 30. Scenic areas are established by the District Manager, Ministry of Forests and Range, and are based on a visual landscape inventory conducted by Canfor. Management objectives for block design and amount of allowable visual impact from harvesting are also established (Visual Quality Objectives) by the District Manager.

One provincial park exists within the TFL boundary: the Giscome Portage Trail. This trail is a designated heritage area and provides hiking and cultural experiences. The Park consists of a 200 metre wide strip of forests (100 metres either side of the trail) and bisects the westerly tip of the TFL.

Caving has been identified as a relatively new and growing recreation experience on TFL 30. The most prominent areas of karst formations / caving activity are the Woodall and Bear Paw Ridge areas. To date, several small cave locations have been identified within the TFL. The Fang Cave, which lies within Fang Provincial Park, on the Northeast corner of the TFL, is one of the largest known caves in Northern BC.

A recreation features inventory, visual landscape inventory, and recreation opportunities spectrum has been completed during the summer of 1999. These inventories document recreation values and are used in management plans to assist in setting management objectives.

As society's demands for out-door recreation experiences increase, the demand for visitor days, quality of experience, and variety of experiences is expected to increase as well. There are adequate facilities and range of experiences to support the current demand.

2.4.3 Wildlife and Biodiversity

TFL 30 contains a wide range of habitat types, from mountainous terrain to rolling plateau, to large winding rivers flanked by wetlands and kettle lakes. This diverse landscape supports a wide variety of flora and fauna and is inhabited by indigenous species representative of those found throughout north central BC. The Prince George Land and Resource Management Plan identifies martin, moose, grizzly bear and mountain caribou as key wildlife species for management on TFL 30. The District Manager has identified medium value caribou habitat as ungulate winter range, and has identified specialized harvest and road maintenance practices to protect caribou.



To conserve biodiversity and wildlife habitats, the following areas have been identified as large-scale reserves (no-harvests zones): McGregor River Management Zone, Horseshoe Recreation Emphasis Area, Tri Lakes Recreation Emphasis Area, Woodall Recreation Emphasis Area, Seebach River Management Area, and High Value Caribou Habitat Areas

2.4.4 Fisheries and Water

The watersheds within TFL 30 are tributary to the Fraser River and provide valuable habitat for migratory salmon as well as many other native fish species. The Seebach River Management Area is designated to protect salmon habitat.

Commercial or residential water infrastructures do not occur within TFL 30. There are no water licenses within the TFL. The demand for such infrastructures is unlikely in the short term.

2.4.5 Guide Outfitting and Trapping

There are eleven trapping licences and five guide / outfitter licences overlapping the boundaries of TFL 30 and covering 100% of the TFL area. The Ministry of Environment (MoE) administers both licences. As per an agreement with the MoE, the contact information for trapline licensees is maintained as confidential. As the entire TFL is currently occupied by trapping and guide licences, expansion of further tenures is unlikely.

2.4.6 Cultural, Heritage and First Nations

The following First Nation's communities have indicated that they have interests in the DFA: Lheidli T'enneh First Nation, McLeod Lake Indian Band, Nazko Band, and the West Moberly First Nation.

As First Nations have historic, cultural, and economic ties to the DFA, it is important they have an opportunity to provide input into management decisions developed for the DFA. In appreciation of their association with the DFA, the participating Licensees and BCTS prepared this SFMP by providing First Nations with the opportunity to participate in its development.

2.4.7 Minerals

The Prince George Land and Resource Management Plan indicates that the TFL has extensive potential for development of the mineral resource, but as of yet large-scale demand or mining operations do not exist.

2.4.8 Range

Range resource demand or tenures currently do not exist on TFL30. The development of the range resource appears unlikely in the foreseeable future.

2.4.9 Botanical Forest Products

To date, due to low potential, botanical forest products permits have not been issued within TFL 30

2.5 Overview of Current Forest Management Practices

2.5.1 Harvest Methods and Seasonal Distribution

Conventional ground-based harvesting utilizing crawler tractors and rubber-tired skidders are the prime logging methods in the Licence area. Cable harvesting is generally conducted on slopes exceeding 40 % and has accounted for approximately 10 % of the areas harvested over the past few years. Aerial logging has been conducted on a very small percentage of the area on TFL30.

During the course of Management Plan 9, harvest schedules will be developed to maximize the timber volume that will be harvested in the summer period. This is presently estimated to be 20 to 30 % of the annual volume.

2.5.2 Silviculture Systems

The majority of the area on TFL30 is harvested using the clear-cut with reserves silviculture system. Approximately 95 % of the area over the term of MP 8 has been harvested using clear-cut with reserves while 5 % of the area has been harvested using partial cutting systems. Partial cutting systems are utilized more often as a method of managing riparian management zones and ungulate winter range. As resource objectives become increasing complex, so will the design of silviculture systems. The total resource (20-Year) plan as an appendix to MP 8 provides a forecast of silviculture systems that are anticipated to occur.

2.5.3 Basic Silviculture

As per the terms of our Licence Agreement and the Forest & Range Practices Act, Canfor and BC Timber Sales are required to reforest and produce free growing stands on all areas harvested after 1987. Once free growing status is achieved the requirement for basic silviculture is complete. Generally, a reforested stand must have a sufficient number of trees and be free of potentially deleterious brush to be declared as "free growing".

A number of field practices are employed to achieve free growing stands. These practices include but are not limited to:

- Seed and Growing Seedlings: See section 2.6.4.
- Reforestation: To ensure a minimum regeneration delay and complete stocking, nearly all harvested sites are reforested using artificial regeneration techniques. Natural reforestation methods are used to augment planted stock in special cases where unique silviculture systems are employed. These are mostly restricted to higher elevation forests and ungulate winter range.
- Site Preparation: Mechanical site preparation and to a lesser extent broadcast burning and chemical site preparation are used as site preparation techniques for artificial regeneration. Raw planting without site preparation has also been applied to appropriate sites. Site preparation treatments are completed on all areas where deemed necessary to achieve acceptable stocking within specified time frames, as defined in the Site Plan for the area.
- Brushing and Weeding: Canfor and BC Timber Sales have completed a Pest Management Plan that details the types of treatments to be applied, including the use of chemicals, to control weeds. Canfor utilizes the chemical herbicide glyphosate during brush and weed and site preparation programs. TFL30 is situated in a brush prone climate where vegetative competition, if uncontrolled, can have a severe impact on plantation survival and performance. In order to reduce dependency on herbicides, Canfor utilizes other measures such as, mechanical treatments, prompt reforestation, site preparation techniques, larger stock types, brush mats, and faster growing species. Experimental mulching and girdling projects have also been used.

- **Silvicultural Surveys:** Surveys are conducted on all sites to determine regeneration performance and assessment of Free Growing criteria. Surveys are also conducted as necessary to determine the level of brush competition prior to a brushing treatment.

2.5.4 Nurseries and Seed Orchards

Canfor requires an adequate supply of high quality seedlings of appropriate stock types for reforestation of denuded areas. To ensure this seedling supply, the company operates a nursery, the J. D. Little Forest Centre, and has seedlings grown under contract at other nurseries. The J. D. Little Forest Centre has an annual capacity of approximately eight million container seedlings.



Canfor, along with, Winton Global Ltd. and West Fraser Mills Ltd. comprise the members of the Vernon Seed Orchard Company (V.S.O.C.). The VSOC is involved in the tree breeding program and orchards are developed to realize the maximum genetic gain. The partnership in VSOC has allowed Canfor to access a secure seed supply. Currently Canfor is able to meet all spruce seed requirements for TFL30 from the seed orchard. Orchards are established that are anticipated to supply all Douglas fir and pine seed for TFL30 within seven years.

2.5.5 Enhanced Forestry Projects

Enhanced forestry projects are normally administered through Canfor's Forest Renewal BC (FRBC) and Forest Investment Account (FIA) Program. Backlog brushing treatments occurred during the years from 1995 to about 2000.

A site index adjustment project was completed on TFL30 and lead to better estimates of forest productivity in second growth stands. The better site values were used in the TFL30 MP9 timber supply analysis.

Converting non-commercial brush (NcBr) alder thickets to productive forest cover has been an established forest practice since 1979. Conversion is generally accomplished by mechanical or chemical site preparation or manual slashing followed by planting. During the term of MP 7 an average of 122 hectares were treated annually. The timber supply analysis for MP 8 assumed an average of 125 ha of conversion per year for 50 years for a total of 6250 ha. This practice is currently under review for its long-term timber benefits and economic and environmental costs.

2.6 Resource Inventories

The following inventories were conducted on TFL30 over the past several years and are used to support resource objectives in this plan. Forest Renewal BC funded all but the visual and recreation resource inventories. Further detail on all inventory and data layers is available in the TFL Management Plan No.9 Timber Supply Analysis Information Package.

- 1) **Terrestrial Ecosystem Mapping (TEM):** TEM was completed in the spring of 2000 for the entire TFL 30. The TEM is used for site index adjustments and habitat modelling, and is now with the Ministry of Environment, for final quality control and approval. (See Terrestrial Ecosystems Map in Appendix 1.)
- 2) **Vegetation Resources Inventory (VRI):** A VRI was completed in the spring of 2000 for the entire TFL. This inventory replaces the existing forest cover inventory, and was a commitment made by the licensee to resolve a volume overestimation problem in MP 8. The project involved a re-delineation of forest cover

polygons (Phase I) and ground sampling to verify forest cover and structure (Phase II). These Phase II ground plots will serve as the foundation for a long-term growth and yield monitoring project.

- 3) Visual and Recreation Inventories: Three recreational inventories were completed in 1999: Recreation Features Inventory (RFI) Recreation Opportunities Spectrum (ROS) and Visual Landscape Inventory (VLI).
- 4) Site Index - Biogeoclimatic Ecosystem Classification Project (SIBEC): The SIBEC project was completed in the spring of 2000 and is used to provide a correlation between site index and biogeoclimatic ecosystem or TEM.
- 5) White Pine Weevil (*Pissodes Strobi*): In association with the SIBEC project, samples of weevil intensity in regenerating spruce stands were taken. This information is used to help define the area at risk from spruce terminal weevil attack and is also used to assess impacts to timber supply. The Growth and Yield Report (See Management Plan 9) identifies yield reductions attributable to white pine weevil.
- 6) Site Index Adjustment Project: The objective of this project was to develop reliable potential site index estimates in post-harvest regenerated stands for the major commercial tree species and ecosystems on TFL 30. The project was completed in three phases. Phase 1: Preliminary site index estimates were developed for spruce on TFL 30. Phase 2: Field random sampling on 61 plots was completed to estimate actual site index estimates for spruce in post-harvest regenerated stands. Phase 3: Final potential site index estimates were developed using statistical adjustments. A final report and map was created and distributed to the Ministry of Forests and Range in the spring of 2000.
- 7) Interior Watershed Assessment Procedure (IWAP): An IWAP and sediment source survey was completed for the entire TFL area in December of 1998. The IWAP is used to support watershed level management criteria. The sediment source survey and IWAP are also used to prioritize watershed rehabilitation projects.
- 8) Level D Terrain Mapping: Level D terrain mapping was completed in 1997 and classifies the entire TFL into polygons of stable, unstable and potentially unstable terrain. This coverage replaces the ESA soil coverage that was used for previous timber supply analysis and management plans.

2.7 Canfor's Forest Management Planning (MP9)

Management plans are a legal requirement for all Tree Farm Licences in British Columbia (i.e. TFL30 is the Defined Forest Area). The purpose of the management plan is to define objectives, goals and commitment and management strategies for a Tree Farm License over a five-year period. Furthermore, management plans, together with an associated timber supply analysis and 20 Year Plan are the primary sources of information by which the Provincial Chief Forester makes an independent determination of AAC for Tree Farm Licenses.

As part of Canfor's ongoing efforts to address high priority Mountain Pine Beetle attacked stands (which do not exist on the TFL in a significant way), Canfor has received from the Deputy Chief Forester in a letter dated October 30, 2007, an extension of MP9 until July 1, 2012 when the current management plan for the DFA (MP9) will expire. Also, Canfor has received approval from the Minister, in a letter dated March 16, 2006, that the AAC on the TFL be dropped from 330,000m³ to 201,312 m³ for the period January 1, 2003 to December 31, 2008. Other public plans include Canfor's and BC Timber Sales' Forest Stewardship Plans (FSP) and Pest Management Plans (PMP). The current FSP's provides the public and administering government agencies with results and/or strategies that will be used to address the resource objectives that have been set by government under Forest and Range Practices Act (FRPA). The PMP's provides the public and administering government agencies with information regarding concepts of integrated pest management pertaining to forest vegetation management including the spraying of chemicals to control completing vegetation. As part of the PMP, annually a "Notification of Intent to Treat" (NIT) is advertised (newspaper and letters) to allow for public comments.

In preparing the management plan for the DFA, Canfor has certain commitments and/or legal requirements to integrate the results from other planning process.

2.7.1 Higher Level Plans

Higher Level Plans (HLP) are established by statutory decision-makers and prevail over all other plans, including Management Plan 9. All relevant objectives and/or strategies from HLP's must be integrated into

plans lower in hierarchy (including MP 9). Canfor and BC Timber Sales is committed to meeting or surpassing all legal requirements, including achieving the objectives of HLP's.

The only applicable HLP is the Objectives for Recreational Sites and Trails for five recreation sites within TFL30. The District Manager, Ministry of Forests and Range, established the HLP for these recreation sites on May 12th, 1997.

2.7.2 Prince George Land and Resource Management Plan

The Land and Resource Management Plan (LRMP) was approved by Cabinet on January 25, 1999 and provides strategic direction for planning and resource development within the Prince George Forest District. The LRMP provides specific resource management direction for individual Resource Management Zones (RMZ) and provides general resource management direction that is applicable to all RMZ's. TFL 30 contains two RMZ's: RMZ 31 which is the main body of the TFL and RMZ 32 which consists of a 200 m strip of forest flanking the Giscome Portage Trail. RMZ 32 is a protected area under the LRMP and is now designated as a provincial park. The LRMP process was a community-based effort for land-use planning, of which Canfor and BC Timber Sales (Small Business Forest Enterprise Program at the time) were participants. We are committed to the implementation of the objectives and strategies within the LRMP.

2.8 Forecasting and Scenario Analysis

The CSA SFM Standard requires explicit forecasts for all indicators. Forecasting indicators requires approaches suited to each indicator. These may include mathematical models, GIS models for quantitative indicators, or scenario-building techniques for qualitative indicators.

Some indicators were forecasted using a GIS modeling technique as follows: An SFM indicator-forecasting project covering the area of the plan was initiated in December 2005. The purpose of the project was to forecast the effects of chosen forest management scenarios on the long-term sustainability of the chosen indicators/measures based on the established targets and thresholds developed in the Public Advisory Group process. A digital dataset was developed that included various base forest inventory GIS data coverages, timber data GIS coverages, non-timber GIS coverages and licensees cutblocks and roads.

A base case was developed and modeled into the future for about 250 years and is the basis for comparing all other management scenarios. The base case used the best available knowledge about current forestry management practices and the growth of the forest. The beetle epidemic is modeled using the provincial-level projection of mountain pine beetle epidemic, current to April 2005. Several other scenarios were modeled and results presented to the Public Advisory Group. The scenario chosen for moving forward in this plan is the Scenario 1 – SFM Base Case. This scenario simulates using current management practices and full implementation of the non-spatial old growth targets. A summary report of outlining assumptions and results of the basecase and scenarios are included in the Appendices.

However many of the indicators in this SFM Plan were forecasted by the scenario-building technique, using a logical "what if" scenario analysis on how the ecological, environmental, and social values of SFM would be affected if the target for each indicator were not achieved.

Using the coarse woody debris indicator and target used in previous examples, a forecast using the "what if" scenario analysis could be as follows:

As this indicator currently has the target set at 100% consistency, one other scenario should be identified:

- a) What if 50% of cutblocks were consistent with coarse woody debris requirements in operational plans?

If only 50% of cutblocks met coarse woody debris requirements in operational plans there could be several negative impacts to ecosystem health and diversity. Maintaining coarse woody debris is a legal requirement. If insufficient CWD is retained, soil nutrient and moisture retention levels may decrease. Dispersed CWD provides shelter to small animals, as well as young seedlings that require shade and snow retention for survival. CWD piles are valuable denning sites for small furbearers whose numbers may decrease in their absence. By enhancing plant and animal habitat, CWD contributes to the overall health

and diversity of the forest ecosystem. Therefore, Canfor and BCTS are committed to meeting the target of 100% consistency with operational plan requirements for CWD.

This method is somewhat subjective in predicting the "what if" scenario, but it can highlight how important the individual indicator can be to overall SFM in a manner mathematical models cannot achieve.

Note, "what if" scenarios are strictly hypothetical scenarios used for contrasting the impacts of operational practices on environmental, social and economic indicators. Where those scenarios depict a practice that falls below the legal requirement, the legal requirement will prevail as a minimum. Any forest practice referred to in legislation has a legal requirement. Forest Stewardship Plans also constitute a legal requirement.

3.0 SFM INDICATORS AND MONITORING PLANS FOR THE DFA

The TFL 30 Public Advisory Group (PAG) identified 55 Indicators and Objectives to be used to report progress towards achieving the goals of Sustainable Forest Management (See Appendix 3, 4 and 5 for more details on Values, Goals, Indicators, Objectives, PAG members and PAG terms of reference).

Within this SFM Plan, the following definitions from the CSA Z809-02 apply:

- **Indicator** — a variable that measures or describes the state or condition of a value.
- **Objective** — a broad statement describing a desired future state or condition of a value.
- **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.
- **Value** — a DFA characteristic, component, or quality considered by an interested party to be important in relation to a CSA SFM element or other locally identified element.

This section summarizes the current status of the indicator and objective, the management practices being implemented or requiring to be implemented, and the responsibilities for monitoring the indicator to address the values and goals identified by the TFL 30 PAG.

| Statement of Indicator | Target and Variance |
|--|---|
| A reiteration of the indicator as identified in the CSA matrix | Targets and allowable variance are identified. Variances are listed in the same units as targets. |

This indicator addresses the following CSA – SFM parameters

| |
|--|
| <p>CCFM Criterion: A reiteration of the indicator as identified in the CSA matrix</p> <p>CSA SFM Element: A reiteration of the indicator as identified in the CSA matrix</p> <p>Value: A reiteration of the indicator as identified in the CSA matrix</p> <p>Objective: A reiteration of the indicator as identified in the CSA matrix</p> |
|--|

Description of Indicator

It may be difficult to understand what an indicator is trying to measure from just the wording of the indicator. The information contained under this heading is meant to provide some clarity and a better description of what the indicator is measuring.

It is common to view sustainable forest management as the balance between ecological, economical and social values with respect to forest management. Continual local stakeholder involvement is critical to determine and maintain this balance and to define SFM on a local level. For the defined forest area, the public advisory group was very important in the process of establishing local level indicators for the application of SFM. In developing the indicators the public advisory group used the CSA-CCFM framework of criteria and critical elements to derive local level values and objectives for the defined forest area. From these values and objectives, local level indicators were developed and management objectives for these indicators were established. The information contained under this heading offers a brief synopsis of how this indicator relates to SFM and attempts to capture the logic in the selection of the indicator to represent the associated criterion (or criteria) and critical element(s). As it is often the case that one indicator will be associated with more than one criterion and/or critical element, those inter-linkages will be described in this section (where applicable).

Current Practices and Status of Indicator

The information provided under this heading summarizes current and best management practices required to meet the objectives or to quantify the current state of the indicators. This will often include cross-references to past Management Plans of TFL 30, obligations under the Forest Practices Code and Forest and Range Practices Act laws and regulations, or Canfor and BC Timber Sales' initiatives beyond regulated management practices (e.g., Environment Policy, Forestry Principles, and Environmental Management System (EMS) obligations).

Establishment of Targets and Future Practices

This section explains the method of determining and reasoning behind the established targets and variance levels. It often lists the method of data collection or the data source for measurement of the indicator.

Forecasting and Predicted Trends

CSA specifies that: "a) quantitative and long-term projections of expected future indicator levels have been prepared for each indicator; b) that the assumptions and analytic methods used in forecasting have been specified; and c) the public participation process was used to select the preferred forecast". Where possible and when they exist, this section provides a summary of the forecasting assumptions and analytical methods used to project a variety of possible future forest conditions that could result from present forest management activities.

To forecast future forest conditions and indicators we have relied on the processes and tools developed by the McGregor Model Forest Association. This process applies scenario planning and spatially explicit forecasts to demonstrate how a set of management criteria (scenarios) affects the evolution of future forests (See Appendix for results of the scenario planning project). Once forecasted, each scenario is then compared to expected outcomes and other scenarios, across a common set of performance indicators. The managing partners of TFL 30 (Ministry of Forests and Range; Ministry of Environment; Department of Fisheries and Oceans; and Canfor) were involved to help describe desired future forest conditions, develop indicators, and analyze the results. The scenario planning project (SPP) began in September of 1998 and was completed in July of 1999.

The results of the scenario planning was presented to the TFL 30 PAG for use in setting objective targets for achieving the goals of sustainable forest management. Canfor has also used the results of the scenario planning project, to select management options that can best achieve the array of timber and non-timber benefits (future forest condition) as described by higher-level plans, the Prince George LRMP, and the Biodiversity Guidebook. The primary result or product of the scenario planning project was a set of management options that is used as the initial "base case" scenario for timber supply forecasts for management plan 9.

Monitoring and Reporting Procedures

The information provided under this heading summarizes the sources of indicator monitoring information, tasks, responsibility and timelines to ensure that Canfor and BC Timber Sales meet the objectives. More specifically, the indicators and objectives derived from the CSA-SFM certification process will be included in the Canfor's and BC timber Sales' EMS Annual Environmental Programs. Subsequently, the management objectives and targets (where applicable) will be entered into the Canfor's and BC Timber Sales' EMS incident tracking system.

Responsibility and Continuous Improvement Opportunities

Analysis of data collected during the monitoring phase is important to relate indicator performance to the particular management strategy applied to achieve the target. Without this analysis, it is impossible to learn what changes are necessary to meet targets or how to implement them.

The analysis, evaluation and continuous improvement phase of SFM is one of the most difficult aspects of the process. The personnel responsible for data analyzing must be objective when determining if changes are required to either the indicators or the strategies use to achieve targets. Co-operation between the PAG, Canfor and BC Timber Sales is important for continuous improvement of sustainable forest management performance.

3.1 Old Forest

| Statement of Indicator | Target and Variance |
|--|---|
| The amount of old forests by landscape unit/Natural Disturbance Type within the DFA. | Targets: as per Table 1 Variance: 0% |

This indicator addresses the following CSA-SFM parameters:

| |
|---|
| <p>1) CSA Criterion: Conservation of Biological Diversity CSA Critical Element: Ecosystem Diversity Local Value: Well-balanced and functioning ecosystems. Local Objective: Maintain Landscapes that support the natural diversity, variety and pattern of ecosystems.</p> <p>2) CSA Criterion: Maintenance and Enhancement of Forest Ecosystem Conditions and Productivity CSA Critical Element: Forest Ecosystem Resilience Local Value: Resilient forest ecosystems. Local Objective: Well-balanced ecosystems that support natural processes.</p> |
|---|

Description of indicator

Maintenance of old forest stands is crucial for forest management as it conserves landscape ecosystem biodiversity. As harvesting usually targets mature stands, forest management must consider how harvesting affects the distribution and percentage of older stands across the landscape. Forest stands exist under different soils, climatic, ecological and natural disturbance conditions. This indicator is designed to ensure the maintenance of old forest representation by biogeoclimatic variant within each landscape unit according to the age of old forest and the percentage of old forest retention by natural disturbance type (*Order Establishing Provincial Non-Spatial Old Growth Objectives*, June 30, 2004 http://ilmbwww.gov.bc.ca/ilmb/lup/policies_guides/oldgrowth/index.html). This is a "state of the forest" indicator and portrays the percentage of the landscape that is represented by the older (late) age classes i.e. mature and old forests.

Current Practices and Status of Indicator

Canfor and BC Timber Sales have been implementing the principles of landscape biodiversity at the Forest Development Plan level since 1999. These principles have included maintaining representative amounts of old forest across landscapes and ecosystems. Table 1 identifies the current status of old forest representation and targets associated with each landscape and ecosystem on TFL30.

In the majority of cases the current status of mature and old forests exceeds the minimum level requirements. In these areas, current and future practices will be to continue to harvest while monitoring the levels of old and mature forests to ensure the minimum target threshold limits are maintained. In some cases however, the amount of old forest is less than the target (or zero), while the amount of mature stage forest exceeds the target (e.g. Averil ESSFwk2). This is because there is currently very little or no forest in these ecosystems that is classified as having an age greater than 250 years old. Current and future practice in these cases will be to avoid harvesting old forest, continue cutting mature forest (where applicable), and to plan for recruitment of old forest as the mature forest ages. The time for recruitment to satisfy the minimum old requirement will be reflected by the "achieved by" column in Table 1. Exceptions to this may be made for forest health protection activities to deal with damaging agents (windthrow, beetle kill).

Establishment of Targets and Future Practices

Targets for old forest amounts were based on the biodiversity guidebook and the Provincial non-spatial old growth order. Forecasting of the old forest amount occurred in all scenario's of the indicator forecasting project. Results of the indicator forecasting are shown in Table 2.

As forest harvesting continues, the expectation is that the amount of mature and old forest will be reduced to approximately the minimum thresholds; however, it will take an entire rotation to achieve these thresholds. The exception to this is that over the short and mid terms the amount of old forest (because of ageing) may increase before decreasing. This is especially true for the areas where old forest is necessary for recruitment.

Forecasting of this indicator will also occur during the timber supply analysis, which typically occurs at five-year intervals. At the annual meeting, results of further forecasting will be presented to the PAG as part of the annual report.

Table 1. Current State of Old Forest

| Landscape Unit | NDT | BEC Subzones | Old Forest (years) | Current Status as of March 31, 2006 | Target % | Achieved By |
|----------------|-----|--------------|--------------------|-------------------------------------|----------|-------------|
| Averil | 3 | SBSwk1, mk1 | Old > 140 | 24% | > 11% | Annually |
| | 1 | ICHvk2 | Old > 250 | 13% | > 13% | Annually |
| | 1 | ESSFwk2 | Old > 250 | 0% | > 19% | 2026 |
| Seebach | 2 | SBSvk | Old > 250 | 8% | > 9% | 2011 |
| | 3 | SBSwk1 | Old > 140 | 47% | > 11% | Annually |
| | 1 | ICHvk2 | Old > 250 | 13% | > 13% | Annually |
| | 1 | ESSFwk2, wc3 | Old > 250 | 6% | > 19% | 2031 |
| Woodall | 2 | SBSvk | Old > 250 | 6% | > 9% | 2011 |
| | 1 | ICHvk2 | Old > 250 | 7% | > 13% | 2016 |
| | 1 | ESSFwk2, wc3 | Old > 250 | 2% | > 19% | 2071 |

Table 2. Forecasting Results of Old Forest

| Landscape Unit | NDT | BEC Subzones | Old Forest (years) | Target % | Forecasting Results Range over 250 years |
|----------------|-----|--------------|--------------------|----------|--|
| Averil | 3 | SBSwk1, mk1 | Old > 140 | > 11% | 24 to 11% |
| | 1 | ICHvk2 | Old > 250 | > 13% | 13 to 16% |
| | 1 | ESSFwk2 | Old > 250 | > 19% | 21 to 19% |
| Seebach | 2 | SBSvk | Old > 250 | > 9% | 9 to 15% in 140 yrs to 11% in 250 yrs |
| | 3 | SBSwk1 | Old > 140 | > 11% | 47 to 11% |
| | 1 | ICHvk2 | Old > 250 | > 13% | 13 to 15% |
| | 1 | ESSFwk2, wc3 | Old > 250 | > 19% | 19 to 29% |
| Woodall | 2 | SBSvk | Old > 250 | > 9% | 9 to 12% |
| | 1 | ICHvk2 | Old > 250 | > 13% | 13 to 26% |
| | 1 | ESSFwk2, wc3 | Old > 250 | > 19% | 2% to 76% in 180 yrs to 62% in 250 yrs |

Monitoring and Reporting Procedures

Forest cover information owned and maintained by Canfor will provide data on age class distribution within TFL30. The forest cover information is updated every 5 years in preparation for the timber supply analysis. Short term updates for reporting purposes, are completed by combining the forest cover base maps and Canfor's spatially linked forest information system (GENUS). Canfor also maintains Terrestrial Ecosystem Mapping (TEM), which is a detailed description of the ecology of TFL30 and is completed to the ecological association level. Canfor and BC Timber Sales will review the indicator to ensure the amount of old forest area is maintained as laid out in the Forest Stewardship Plan. A review of the indicator status will occur in conjunction with the timber supply analysis. Canfor and BC Timber Sales will also review plans on an annual basis to determine if targets for each NDT are achieved as planned and determine if a plan of action to correct any shortcomings and monitor threats by damaging agents is required.

Responsibility and Continuous Improvement Opportunities

Canfor and BC Timber Sales will look for opportunities for continual improvement and recruitment strategies for BEC units with targets cannot be met in the short term. Old forest losses due to the Mountain Pine Beetle epidemic are to be monitored and are expected to be minimal.

3.2 Interior Old Forest

| Statement of Indicator | Target and Variance |
|---|--|
| The amount of old interior forest by NDU/merged BEC within the DFA. | Target: as per Table 3 Variance: 0% |

This indicator addresses the following CSA-SFM parameters:

| |
|--|
| 1) CSA Criterion: Conservation of Biological Diversity CSA Critical Element: Ecosystem Diversity Value: Well balanced and functioning ecosystems. Objective: Maintain landscapes that support the natural diversity, variety and pattern of ecosystems. |
| 2) CSA Criterion: Maintenance and Enhancement of Forest Ecosystem Conditions and Productivity CSA Critical Element: Forest Ecosystem Resilience Value: Resilient Forest Ecosystems Objective: Well-balanced ecosystems that support natural processes |

Description of Indicator

Old interior forest conditions are achieved when the climatic and biotic impact of adjacent younger stands no longer influences environmental conditions. This indicator is important because many species are dependent upon old interior forest conditions for their habitat requirements. Historically, natural disturbance events such as fire, insects, and wind created diverse landscapes that provided sufficient reserves of mature timber to create ample interior old forest conditions. Sustainable forest management can contribute to creating these conditions by planning harvesting patterns that do not "fragment" the landscape into patch sizes insufficient in area to achieve these goals. By creating interior forest conditions, ecosystem diversity is maintained in the Defined Forest Area (DFA) as well as habitat for plant and animals species that depend on these ecosystems. Having a diverse representation of all ecosystem types enhances forest ecosystem resilience by providing habitat for species that contribute to the overall health and productivity of the forest

Current Practices and Status of Indicator

The Landscape Objective Working Group (LOWG), which has representation from MSRM, MOF and timber licensees, aided MSRM in the development of landscape biodiversity objectives for old interior forest conditions for the Prince George Forest Region, which included the TFL30 DFA. These objectives were established by MSRM in consultation with licensees, BCTS and the MoFR and utilize Natural Disturbance Unit (NDU) research conducted by DeLong (2002). Old interior forest retention objectives have been established for each NDU that occurs within the DFA. The NDU equates to the previous three Natural Disturbance Types. The baseline analysis for the establishment of landscape biodiversity objectives across the Prince George TSA used a buffered distance from existing openings and younger age classes to calculate the amount of old interior forest. This Order does not apply to Tree Farm Licenses however TFL30 has adopted the targets as outlined in the Biodiversity Objectives (Table 3).

Table 3. Current Interior Old Forest Condition and Forecasting Results.

| NDU / Merged Biogeoclimatic Unit | Target Total Old Forest Area (ha) | Target Old Interior % | Target Old Interior ha | Current Old Interior % | Current Old Interior ha | Old Interior in 50 Years % | Old Interior in 50 Years ha |
|-------------------------------------|-----------------------------------|-----------------------|------------------------|------------------------|-------------------------|----------------------------|-----------------------------|
| A2 NDU_McGregor Plateau_ESSF | 137 | ≥40% | ≥55 | 190% | 260 | 5% | 7 |
| A3 NDU_McGregor Plateau_SBSmk1 | 816 | ≥25% | ≥204 | 282% | 2,301 | 1% | 12 |
| A4 NDU_McGregor Plateau_SBSvk, wk1 | 13,397 | ≥10% | ≥1,340 | 35% | 4,635 | 4% | 507 |
| A14 NDU_Wet Mountain_ESSFwk2 | 3,907 | ≥40% | ≥1,563 | 92% | 3,612 | 77% | 3,006 |
| A15 NDU_Wet Mountain_ESSFwc3 | 2,479 | ≥40% | ≥992 | 48% | 1,192 | 83% | 2,049 |
| A16 NDU_Wet Mountain_SBSwk1 | 1,273 | ≥25% | ≥318 | 139% | 1,768 | 24% | 310 |
| A17 NDU_Wet Mountain_SBSvk | 28,952 | ≥25% | ≥7,238 | 66% | 18,983 | 7% | 2,025 |
| A19 NDU_Wet Trench Mountain_ESSFwk2 | 935 | ≥40% | ≥374 | 109% | 1,019 | 105% | 983 |
| A20 NDU_Wet Trench Mountain_ESSFwc3 | 29 | ≥40% | ≥11 | 105% | 30 | 105% | 30 |
| A23 NDU_Wet Trench-Valley_SBSwk1 | 1 | ≥10% | ≥0 | 0% | 0 | 0% | 0 |
| A25 NDU_Wet Trench-Valley_SBSvk | 10,342 | ≥25% | 2,585 | 30% | 3,117 | 5% | 509 |

Establishment of Targets and Future Practices

Targets for this indicator were derived from the Order Establishing Landscape Biodiversity Objectives. It is important that old interior forest objectives be managed with a temporal perspective (i.e. achieving the objectives over time). These objectives were established by ILMB in consultation with licensees, BCTS and the MOF and utilize Natural Disturbance Unit (NDU) research conducted by DeLong (2002). Old interior forest retention objectives have been established for each NDU that occurs within the Prince George DFA. The baseline analysis for the establishment of landscape biodiversity objectives across the Prince George TSA used a buffered distance from existing openings and younger age classes to calculate the amount of old interior forest.

As stands age, Canfor and BC timber Sales will have to demonstrate how the dynamics of old interior forest will change and be managed. Canfor and BCTS planning foresters designing cut blocks into the future will be developing and refining short time span (likely 5-year) operational interior old forest forecasts and monitoring these on an ongoing basis so that new development allows interior old forest to meet the targets. A critical part of the strategy in the immediate future will be to minimize fragmentation of mid-aged (60-100 year old) forests, as these are the stands that will provide the old interior forest conditions in the future.

Forecasting and Predicted Trends

Due to the complexity of calculating interior old forest, forecasting results are only presented into the future for 50 years. The amount of interior old forest was not part of the modeling constraints applied during forecasting analysis and therefore the forecasts are simply reported out values. As a result, the future forecast condition shows that for a few of the NDU/merged BEC, there is a trend below the targets overtime, particularly in relation to non-ESSF merged BEC units. The final design of cut blocks and assuring amount of interior old forest is an operational planning exercise and not a modeling exercise.

Planning foresters designing cut blocks into the future will be developing and refining short time span (likely 5-year) operational forecasts and monitoring these on an ongoing basis so that interior old forest meets the targets. Additional forecasting of this indicator will occur during future indicator supply analyses, which are anticipated to be at five-year intervals.

Monitoring and Reporting Procedures

The Planning Forester will be responsible for monitoring the old interior forest retention levels and determining if the indicator objective is being met through these targets. This will include comparison to appropriate areas outside the TFL30 to better monitor trends and influences of forest interior conditions. At the annual meeting, results of further forecasting will be present to the PAG as part of the annual report.

As forest harvesting continues the expectation is that the availability of the forest interior condition will be reduced/or increased to approximately the minimum thresholds, as the case may be. It is expected to take up to several decades to achieve thresholds where the recruitment strategy is planned.

Responsibility and Continuous Improvement Opportunities

GIS specialists are responsible for maintaining updated forest cover information, Terrestrial Ecosystem Mapping (TEM) and Natural Disturbance Unit boundaries. The planning forester is responsible for monitoring the forest interior status and determining what action, if any is required to achieve the targets as determined.

3.3 Young Forest Patches

| Statement of Indicator | Target and Variance |
|--|--|
| The young forest patch size distribution by NDU/merged BEC within the DFA. | Target: as per Table 3 Variance: 0% |

This indicator addresses the following CSA-SFM parameters:

| |
|--|
| 1) CCFM Criterion: Conservation of Biological Diversity CSA SFM Element: Ecosystem Diversity Value: Well balanced and functioning ecosystems. Objective: Maintain landscapes that support the natural diversity, variety and pattern of ecosystems. |
| 2) CCFM Criterion: Maintenance and Enhancement of Forest Ecosystem Conditions and Productivity CSA SFM Element: Forest Ecosystem Resilience Value: Resilient forest ecosystems Objective: Well-balanced ecosystems that support natural processes. |

Description of Indicator

A patch is a forest unit with identifiable boundaries and vegetation different from its surroundings. Often patches are even aged forests established from natural disturbances such as fire, wind or pest outbreaks, or from harvesting. Patches may be created from a single disturbance event or through a combination of events such as a fire and subsequent salvage harvesting. The result of varying disturbance events over time is a landscape of forest stands and patches of different sizes composed of a variety of species, stocking levels and ages. Many natural disturbance events, such as wildfire have been reduced by forest management practices. In the absence of natural disturbance, timber harvesting is used as a disturbance mechanism and therefore influences the distribution and size of forest patches over much of the Defined Forest Area (DFA). Patch size distribution created by harvesting should emulate the patterns historically created by a natural disturbance regime, where patches varied in size and shape. Patch size categories used in Prince George Forest District include the following: <51 hectares, 51-100 hectares, 101-1000 hectares and > 1000 hectares.

The indicator addresses the pattern of young forest patches distributed across the landscape, where young forests are defined as stands 0 to 20 years of age. In order to remain within the natural range of variability of the landscape and move toward sustainable management of the forest resource, it is important to develop and maintain young patch size targets based on historical natural patterns. This indicator will monitor the consistency of harvesting patterns compared to the natural patterns of the landscape.

Current Practices and Status of Indicator

Canfor and BC Timber Sales have been implementing the principles of landscape biodiversity at the Forest Development Plan level since 1999. These principles have included providing for a natural patch size distribution across landscapes and ecosystems. Table 4 identifies the current status of patch size distribution and targets associated with each landscape and ecosystem on TFL 30. In most cases, due to past harvesting trends, the current status of the patch size category is not near the target required. As the forest grows older, and new harvesting is carried-out, the targets will be maintained or achieved; however, this process will take several decades (in some cases). Current and future practice will be to prescribe further harvesting that will accelerate the trend toward the desired target for each category. This can be achieved within the Forest Stewardship Plan by:

- Closely monitoring and addressing forest health problems before they create excessive patches (either alone or by linking existing cutblocks).
- Planning to connect medium and small patches to create larger patches where there is a surplus of smaller patches and deficit of larger patches.
- Protecting "leave strips" between patches for a minimum of 20 years where the targets for the category are close to the target.
- Reforesting insufficiently stocked areas as soon as possible, and where practical.

The patch size objective was met in 2005/06 as the targets that were to be achieved annually were accomplished.

Table 4. Current Young Patch Size Distribution and Forecasting Results.

| Natural Disturbance Unit | Young Patch Size Class | | | | Needed Future Young Patch Size Trending |
|---|------------------------|------------|-------------|------------|---|
| | < 50 ha | 50-100 ha | 100-1000 ha | >1000 ha | |
| McGregor Plateau – Target % | 10% | 5% | 45% | 40% | |
| Current Young Patch Size Distribution % | 3% | 3% | 3% | 90% | Trend towards increasing < 50ha and 100-1000ha blocks |
| Year 50 – Young Patch Size Distribution % | 19% | 6% | 17% | 58% | |
| Wet Mountain – Target % | 20% | 10% | 60% | 10% | |
| Current Young Patch Size Distribution % | 7% | 7% | 22% | 64% | Trend towards increasing < 50ha and 100-1000ha blocks |
| Year 50 – Young Patch Size Distribution % | 25% | 11% | 20% | 45% | |
| Wet Trench – Target % | 20% | 10% | 60% | 10% | |
| Current Young Patch Size Distribution % | 6% | 4% | 1% | 89% | Trend towards increasing < 50ha, 50-100ha & 100-1000ha blocks |
| Year 50 – Young Patch Size Distribution % | 13% | 5% | 10% | 71% | |

Establishment of Targets and Future Practices

Targets are derived directly from the Order Establishing Landscape Objectives for PG TSA (2004), and are based on the NDU research developed by Craig DeLong (2002). Specific factors will limit how effective Canfor and BC Timber Sales will be at trending toward patch size targets. These include historical harvesting patterns that have fragmented portions of the DFA and natural disturbance events such as wildfire and to a lesser degree the mountain pine beetle epidemic located in the south west corner of TFL30.

There are some measures that can be taken to achieve patch size distribution targets. Forest health will have to be closely monitored and addressed before they create excessive patches (either alone or by linking existing cutblocks). This will be particularly challenging in areas of high mountain pine beetle infestation. Harvesting should be planned to connect medium and small patches to create larger patches where there is a surplus of smaller patches and deficit of larger patches. The maintenance of "leave strips" between patches for a minimum of 20 years can be done where the targets for the category are within the desired range.

Forecasting and Predicted Trends

Due to the complexity of calculating young patch, forecasting results are only presented into the future for 50 years. The patch size categories were not part of the modeling constraints applied during forecasting analysis and therefore the forecasts are simply reported out patch size values. As a result, the future forecast condition shows that for a couple of the categories, there is a trend away from the targets overtime, particularly in relation to larger openings. The final design of patches is an operational planning exercise and not a modeling exercise.

Planning foresters designing patches into the future will be developing and refining short time span (likely 5-year) operational forecasts and monitoring these on an ongoing basis so that patches trend toward the targets. Additional forecasting of this indicator will occur during future indicator supply analyses, which are anticipated to be at five-year intervals.

Forecasting of this indicator will also occur during the timber supply analysis, which typically occurs at five-year intervals.

Monitoring and Reporting Procedures

The Planning Forester oversees the generation of accurate landscape unit planning maps. This will occur every 5 years in conjunction with the FSP review. Data will be available through the GENUS database and TEM systems.

Future forecasting of this indicator will occur during the timber supply analysis, which occurs in five-year intervals.

Responsibility and Continuous Improvement Opportunities

It will be the responsibility of the Planning Forester to monitor and report on the progress towards target achievement set for this indicator. Progress will be reported annually to the PAG for the operating year April 1 to March 31.

3.4 Wet Trench & Wet Mountain Young Patch Size Distribution

| Indicator Statement | Target and Variance |
|---|-------------------------------------|
| Trend towards the percentage of area of patches in 101-500ha range within the Wet Trench and Wet Mountain of the young patch size distribution class 101-1000ha | Target: 70% Variance: $\pm 10\%$ |

This indicator addresses the following CSA-SFM parameters:

| |
|---|
| 1) CCFM Criterion: Conservation of Biological Diversity CSA SFM Element: Ecosystem Diversity Value: Well balanced and functioning ecosystems that support natural processes Objective: Maintain landscapes that support the natural diversity, variety and pattern of ecosystems |
| 2) CCFM Criterion: Maintenance and Enhancement of Forest Ecosystem Conditions and Productivity CSA SFM Element: Forest Ecosystem Resilience Value: Resilient Forest Ecosystems Objective: Well balanced ecosystems that support natural processes |

Description of Indicator

As noted earlier, a patch is a forest unit with identifiable boundaries and vegetation different from its surroundings. Often patches are even aged forests established from natural disturbances such as fire, wind or pest outbreaks, or from clearcut harvesting. Patches may be created from a single disturbance event or through a combination of events such as a fire and subsequent salvage harvesting.

Patch size categories used in Prince George Forest District include the following: <51 hectares, 51-100 hectares, 101-1000 hectares and > 1000 hectares. However in the higher elevation areas (Wet Trench and Wet Mountain natural disturbance units) the range of 101- 1000 hectares was too large a range to actually account for the natural disturbance ecology. Therefore the range was sub divided into 101-500 hectares and 501-1000 hectares.

The result of varying disturbance events over time is a landscape of forest stands and patches of different sizes composed of a variety of species, stocking levels and ages. Many natural disturbance events, such as wildfire have been reduced by forest management practices. In the absence of natural disturbance, timber harvesting is used as a disturbance mechanism and therefore influences the distribution and size of forest patches over much of the Defined Forest Area (DFA). Patch size distribution created by harvesting should emulate the patterns historically created by a natural disturbance regime, where patches varied in size and shape.

The indicator addresses the pattern of young forest patches distributed within the Wet Trench and Wet Mountain NDU, where young forests are defined as stands 0 to 20 years of age. In order to remain within the natural range of variability of the landscape and move toward sustainable management of the forest resource, it is important to develop and maintain young patch size targets based on historical natural patterns. This indicator will monitor the consistency of harvesting patterns compared to the natural patterns of the landscape.

Current Practices and Status of Indicator

The Landscape Objective Working Group (LOWG) which has representation from the Ministry of Agriculture and Lands, the Ministry of Forests and Range (MoFR) and timber Licensees, developed landscape biodiversity objectives for patch size distribution for the Prince George Timber Supply Area (PGTSA). Although the TFL30 DFA is not accountable to the LOWG, Canfor and BC Timber Sales have chosen to adopt these objectives which utilize the research conducted by DeLong (2002). Young forest patch size distribution objectives have been established for each NDU that occurs within the DFA The NDU boundaries equate closely to the Natural Disturbance Types boundaries so the NDT names remain the same.

Current status is shown on the following table.

Table 5. Wet Mountain & Trench Current Young Patch Size Distribution and Forecasting Results.

| Natural Disturbance Unit | Young Patch Size Class | | |
|---|------------------------|--------------------------------|-------------------------|
| | Area in 100-1000 ha | Area & % in 100-500 ha | Area & % in 500-1000 ha |
| Wet Mountain – Target % | | 70% \pm10% | |
| Current Young Patch Size Distribution | 3912 ha | 3001 ha 77 % | 911 ha 23% |
| Year 50 – Young Patch Size Distribution | 2143 ha | 2143 ha 100% | 0 ha 0% |
| Wet Trench – Target % | | 70% \pm10% | |
| Current Young Patch Size Distribution | 110 ha | 110 100% | 0 ha 0 % |
| Year 50 – Young Patch Size Distribution | 828 ha | 828 100 % | 0 ha 0 % |

Currently, within the 100-500 ha patch size class, the Wet Mountain NDU is within the target range and the Wet Trench NDU is above the target range. As new cut blocks are designed in the short term within the Wet Trench NDU, there will be efforts made to increase young patch area within the 500-1000 ha patch size category, so that the 100-500 ha young patch area falls within the target range.

Establishment of Targets and Future Practices

Targets come directly from a review of the natural disturbance dataset for the Prince George TSA based on the NDU research developed by Craig DeLong (2002). Specific factors will limit how effective Canfor and BC Timber Sales will be at trending toward patch size targets. These include historical harvesting patterns that have fragmented portions of the DFA and natural disturbance events such as wildfire, and insect and disease epidemics.

Forecasting and Predicted Trends

Due to the complexity of calculating young patch, forecasting results are only presented into the future for 50 years. The patch size categories were not part of the modeling constraints applied during forecasting analysis and therefore the forecasts are simply reported out patch size values. As a result, the future forecast condition shows that there is a trend outside the target range overtime, particularly in relation to decreasing larger openings. The final design of patches is an operational planning exercise and not a modeling exercise.

Planning foresters designing patches into the future will be developing and refining short time span (likely 5-year) operational forecasts and monitoring these on an ongoing basis so that patches trend toward the targets. Additional forecasting of this indicator will occur during future indicator supply analyses, which are anticipated to be at five-year intervals.

Forecasting of this indicator will also occur during the timber supply analysis, which typically occurs at five-year intervals.

Monitoring and Reporting Procedures

Canfor and BC Timber Sales will monitor Patch size targets based on natural disturbance units. Data sources used in the monitoring process include forest cover inventory, NDU maps, adjacent licensee planning and harvest history information and GENUS data. Forest cover inventory information with updates based on harvesting activities will be analyzed on a five-year basis to ensure forest management is moving toward patch size targets within these NDU. Canfor and BC Timber Sales will compare results with appropriate areas outside the TFL30 to monitor trends and influences.

Responsibility and Continuous Improvement Opportunities

It will be the responsibility of the Planning Forester to monitor and report on the progress towards target achievement set for this indicator. Progress will be reported annually to the PAG for the operating year April 1 to March 31.

3.5 Biodiversity reserves

| Statement of Indicator | Target and Variance |
|---|--|
| The amount in hectares of landscape-level biodiversity reserves within the DFA. | Target: as per Table 6 Variance: 0% |
| Hectares of unauthorized forestry related harvesting or road construction within Protected Areas. | Target: 0 ha Variance: 0% |

This indicator addresses the following CSA-SFM parameters:

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|--|
| 1) CCFM Criterion: Conservation of Biological Diversity CSASFMElement: Ecosystem Diversity Value: Well balanced and functioning ecosystems. Objective: Maintain landscapes that support the natural diversity, variety and pattern of ecosystems. |
| 2) CCFM Criterion: Conservation of Biological Diversity CSASFMElement: Genetic Diversity Value: Genetic diversity. Objective: Maintain natural genetic diversity. |
| 3) CCFM Criterion: Conservation of Biological Diversity CSASFMElement: Protected Areas and Sites of Special Biological Significance Value: Sites of Special Biological Significance Objective: Sites of special biological significance are identified and appropriately managed. |
| 4) CCFM Criterion: Maintenance and Enhancement of Forest Ecosystem Conditions and Productivity. CSASFMElement: Forest Ecosystem Productivity Value: Productive ecosystems. Objective: Maintain ecosystem conditions that are capable of supporting naturally occurring species. |

Description of Indicator

Distributing biodiversity reserves, at a variety of scales (small and large), throughout the managed forest will provide for a mix of vegetation age, structure, and composition that will support a variety of species habitat requirements. There are two levels of Biodiversity Reserves: The **stand level**, which include mapped wildlife tree patches and riparian reserve areas, and at the **landscape level**, which includes provincial parks and all other large reserve areas that are removed from the timber harvesting land base. This indicator evaluates the amount of productive forest devoted to landscape level biodiversity reserves for each biogeoclimatic variant. The indicator is related to three SFM parameters and provides for ecosystem diversity, and genetic diversity and forest ecosystem productivity.

Landscape biodiversity reserves provide for ecosystem diversity by creating a variety of different forest types, ages, structures, and composition across a broad area. Maintaining landscape level reserves promotes the distribution of a variety of unmanaged biogeoclimatic variants across the planning area, and therefore ensures that a variety of forest stand types are maintained. This same variety will include a mix of species, and diversity within species that will promote genetic diversity. By providing for ecosystem and genetic diversity, forest ecosystem productivity is enhanced from a wide range of species and habitats all contributing to a well functioning and resilient system.

Tracking the amount of area harvested within Protected Areas will allow forest managers to determine if there are flaws in the planning and implementation of forestry activities.

Current Practices and Status of Indicator

The Provincial Government currently classifies landscape level retention through higher level and strategic planning initiatives. Some examples of this include Crown Land Plans and the Parks and the Protected Areas Strategy. Canfor through its Management Plan can also recommend large scale biodiversity reserves.

A target of zero hectares of unauthorized forestry related harvesting or road construction within Protected Areas has been established, as there should be no tolerance for errors of this nature. Using GIS and spatial databases, site plans are planned and reviewed to ensure forestry activities are not planned within Protected Areas. EMS checklists and active supervision of road construction and harvesting are currently used to ensure Site Plans are implemented correctly in the field.

No harvesting has occurred during April 1, 2005 to March 31, 2006 in protected areas within the DFA.

Establishment of Targets and Future Practices

Landscape level baseline targets for each of the variants were established from a review of the current status of parks/ protected, wildlife/habitat reserves from the Crown Land Plan, and other large-scale reserves from the Timber Supply Review process. Neither Canfor nor BC Timber Sales established these reserve areas, but has participated in the process of their allocation, mainly through the participation in various land-use planning processes which were co-ordinated and led by the Provincial Government over the past number of years. Canfor and BC Timber Sales will continue to work with the various Government Agencies responsible for land-use planning and advocated for the continued protection of landscape-level reserves consistent with the baseline targets.

Canfor and BC Timber Sales have established a target of zero tolerance for trespasses within Protected Areas. Ensuring unauthorized forestry related harvesting within protected areas does not occur preserves the values that society places on them.

Table 6. Current Status of Biodiversity Reserves.

| Biodiversity Reserve Type | Current Status (Ha)* As of March 31, 2006 | Target (Ha)* | Area of unauthorized harvest (ha) | Achieved by |
|----------------------------------|--|---------------------|--|--------------------|
| Giscome Portage Trail | 93 | 93 | 0 ha | Annually |
| Horseshoe Recreation Area | 649 | 649 | 0 ha | Annually |
| High Value Caribou Habitat | 8,313 | 8,313 | 0 ha | Annually |
| McGregor River Management Zone | 3,182 | 3,182 | 0 ha | Annually |
| Seebach Riparian Management Zone | 1,196 | 1,196 | 0 ha | Annually |
| Tri Lakes Recreation Area | 675 | 675 | 0 ha | Annually |
| Woodall Recreation Area | 1,734 | 1,734 | 0 ha | Annually |
| Total | 15,842 ha | 15,842 ha | 0 ha | |

*All areas refer to the productive forested portion of the TFL

Forecasting and Predicted Trends

Canfor and BC Timber Sales will continue to maintain the small and large-scale biodiversity reserves within the DFA. Over the long-term, it is anticipated that there will be a continual increase of areas set aside for biodiversity reserves as greater knowledge is accumulated regarding the ecological requirements to conserve ecosystem biodiversity. Canfor and BC Timber Sales recognize that large scale biodiversity reserves, may be dynamic and will be assessed and taken into account during the timber supply analysis estimated to be every 5 years.

It is predicted that Canfor and BC Timber Sales will have zero hectares of their forestry operations within Protected Areas. Canfor and BC Timber Sales have established a target of zero tolerance for trespasses within Protected Areas and at this time that target is expected to be met. This indicator is not easy to quantifiably forecast, however, it is important to identify what the accepted targets mean to Sustainable Forest Management. To forecast this indicator, a "what if scenario" analysis can be used to help identify the importance of the stated target to overall SFM within the DFA. The current target is set at 0 ha of unauthorized forestry related harvesting or road construction within Protected Areas. The following "what if scenario" is used in this analysis:

- a) What if only 50% (7,921 ha) of the landscape reserve area was established?
- b) What if a target of ≤ 10 ha of unauthorized forestry related activities was established?

If only 50% (7,921 ha) of the landscape reserve area was established within the DFA, this would have several negative impacts to ecosystem health and diversity. If insufficient landscape reserves are retained, natural ecosystem functioning levels may decrease. Dispersed landscape level reserves provides habitat to animals and maintain natural genetic diversity.

10 ha or less would represent a very small area to be harvested or disturbed by road construction within a Protected Area. However, ecologically it could be quite serious. The area disturbed could be an extremely rare plant community or important habitat for a Species at Risk. Unauthorized road construction could create access to previously inaccessible sites creating opportunity for poaching, all terrain vehicle use, and other human activities.

Ensuring that landscape reserves are present on the landscape and that the target of 0 ha of unauthorized forestry related harvesting within Protected Areas is met will protect their ecological function and preserve the values that society places on them.

Monitoring and Reporting Procedures

Landscape level biodiversity reserves are calculated areas of total productive forest area within the Defined Forest Area (DFA). Canfor and BC Timber Sales will continue to work with Government Agencies to promote the designation of landscape level reserves. Canfor and BC Timber Sales will also maintain and update spatial data of all landscape-level reserves consistent with land-use and boundary designations from Provincial Agencies. Where significant changes to the designation of reserve areas or inventories have occurred, an automated GIS query is run to assess performance relative to the stated target. Performance relative to the stated target will be assessed and reported in the annual SFM Plan report for the operating year April 1st to March 31st.

The Planning Forester is responsible to monitor updates on Protected Areas through higher-level plans and government Orders. Canfor and BC Timber Sales will ensure the location of Protected Areas is updated on an annual basis.

Responsibility and Continuous Improvement Opportunities

The Canfor and BCTS Planning Forester are responsible for working with the Government Agencies' land-use planning processes. Opportunities for developing new landscape level reserves should be made in consideration of other objectives (protected species, old growth protection) and the current mountain pine bark beetle infestation. If unauthorized harvesting or road construction within Protected Areas the Ministry of Forests and Range, the Ministry of Environment, and the Ministry of Agriculture and Lands will be notified. Improvements in Site Plan development and implementation, either by training, increased supervision or other methods can be adopted if required

3.6 Stand Level Retention

| Indicator Statement | Target and Variance |
|---|---|
| The average percentage of stand level retention in harvested areas within the DFA | Target: >7% annually (> 3.5% by cut block) Variance: 0% |

This indicator addresses the following CSA-SFM parameters:

| |
|---|
| 1) CCFM Criterion: Conservation of Biological Diversity CSA SFM Element: Ecosystem Diversity Value: Well balanced and functioning ecosystems Objective: Maintain landscapes that support the natural diversity, variety and pattern of ecosystems. |
| 2) CCFM Criterion: Conservation of Biological Diversity CSA SFM Element: Genetic Diversity Value: Genetic Diversity Objective: Maintain natural genetic diversity. |

Description of Indicator

As noted in the previous section, biodiversity reserves can occur at the stand level. Stand level retention consists primarily of wildlife tree patches (WTPs) and riparian management areas. WTPs are forested patches of timber within or immediately adjacent to a harvested cut block, while riparian management areas are associated with water features. Stand retention provides a source of habitat for wildlife, sustains local genetic diversity, and/or protects important landscape or habitat features, such as mineral licks and raptor nesting sites. Maintenance of habitat through stand retention contributes to conservation of ecosystem diversity by conserving a variety of seral stages, structure and unique features at the stand level.

Current Practices and Status of Indicator

Canfor and BC Timber Sales manage stand level retention within TFL30 for each cut block. Retention level in each block is documented in the associated Site Plan and recorded in the database systems and reported out in RESULTS on an annual basis.

From April 1, 2005 to March 31, 2006, only one block was logged greater than 15ha in size and the level of stand level retention was 17.2%.

Establishment of Targets and Future Practices

The targets of 3.5% and 7.0 % are derived from the Forest Planning and Practices Regulation, Section 66: Wildlife Tree Retention. These targets were established by the Provincial Government to ensure an adequate amount of original stand structure is maintained in and/or around a cut block as a result of landscape planning. This is a change from forest planning that was previously assessed at a stand level. It is anticipated that the larger the cut block design, the more retention will be associated with the block. Salvage blocks may have reduced retention in relation to their size compared to non-salvage blocks due to diminished quality of stand level retention features. In all cases, the minimum retention requirements will be maintained.

Forecasting and Predicted Trends

Stand level retention is not easy to quantifiably forecast. However, forecasting of this indicator can be completed with the use of a "what if scenario" to help assess anticipated future trends for stand level retention. This could include two potential scenarios:

- a) What if there was no stand level retention prescribed in managed stands?
- b) What if three times the stand level retention was prescribed in managed stands?

The ecological benefit from stand level retention is assumed to increase with the number of retention areas present in managed stands. Benefits increase up to a saturation point where overall value then begins to level off. At this point in time it is not possible to identify this saturation point as each stand has different ecological attributes. If no stand level retention was prescribed, it is expected that biodiversity values would diminish. Wildlife productivity may decline, ecosystem and genetic diversity would decrease and natural patterns across the landscape would not be represented. Conversely, if three times the stand level retention was prescribed in

managed stands one could anticipate economic values from the timber resource would not be fully achieved. Silviculture activities such as reforestation could potentially become less efficient and more costly due to smaller harvesting units. Higher levels of retention would also increase fragmentation of the landscape, making patch size distribution objectives more difficult to achieve.

The comparison of the above scenarios implies that a balance of values can be achieved through an identified level of stand retention that lies somewhere in between the two situations. Although this level has not yet been identified through past experience or through scientific findings, Canfor and BC Timber Sales is committed to achieving the indicator target and will strive to continually improve practices, as new information becomes available. Within the TFL30 DFA, future trends suggest that stand level retention will remain constant.

Monitoring and Reporting Procedures

Information for stand level retention is to be found in Site Plans and Canfor's and BC Timber Sales' information tracking systems such as GENUS. Stand level retention will be measured within TFL30 by cut block. Each block must contain at least 3.5% retention and there is no maximum value for retention areas. All cut blocks harvested and completed between April 1 and March 31 of each year must have an average of 7.0% retention of the total area of the cut blocks.

Annually, stand retention data will be updated as future blocks are harvested, and then reviewed to ensure targets are being achieved. Results will be reported to the Public Advisory Group (PAG) as part of the SFMP annual report. Retention percentages are also reported to the Ministry of Forests and Range annually through RESULTS for the operating year April 1st to March 31st.

Responsibility and Continuous Improvement Opportunities

The Planning Forester is responsible for monitoring and reporting stand level retention percentages. In the event the stand retention levels in planned blocks is less than the target retention %, Canfor and BC Timber Sales will have to demonstrate this will not result in non-conformance to target or redesign the proposed blocks to meet targets.

A potential opportunity for continual improvement would rely on developing strategies to assess the effectiveness associated with wildlife and biodiversity objectives through stand level retention. This would allow for evaluation and future adjustments of the targets to sustain biodiversity values within harvested stands. Canfor and BC Timber Sales will encourage research to evaluate the success of previous stand level retention in order to improve future WTP design.

3.7 Coarse Woody Debris

| Indicator Statement | Target and Variance |
|---|------------------------------|
| The percentage of site plans that have Coarse Woody Debris (CWD) retention within the natural range appropriate for the site. | Target: 100% Variance: 0% |
| Percentage of cut blocks consistent with CWD requirements in operational plans. | Target: 100% Variance: 0% |

These indicators address the following CSA-SFM parameters:

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|--|
| 1) CCFM Criterion : Conservation of Biological Diversity CSA SFM Element : Ecosystem Diversity Value : Well balanced and functioning ecosystems. Objective : Maintain landscapes that support the natural diversity, variety and pattern of ecosystems. |
|--|

Description of Indicators

Coarse woody debris (CWD) is defined as material greater than 10 cm in diameter, in all stages of decay and consists of above-ground logs, exposed roots and large fallen branches (B.C. Ministry of Forests, 2000). CWD is a vital component of a healthy functioning forest ecosystem in that it provides habitat for plants and animals. It is also an important source for soil nutrients and aids in soil moisture retention. Targets for CWD requirements are identified in the site plan for a specific cutblock.

Despite the fact that there is often an economic incentive to minimize debris that is left behind on site-specific CWD retention levels will be targeted in all areas to be harvested. Removal of logging debris can be detrimental if the habitat needs of organisms are compromised. Thus, retention levels have to balance economic and ecological factors. The CWD levels that exist within WTPs and riparian retention areas, unsalvaged burns, or unsalvaged mountain pine beetle sites within the DFA will also serve to compliment CWD levels retained within harvested blocks. These indicators ensure that CWD retention requirements are part of the planning process and those requirements are achieved in cut blocks.

Current Practices and Status of Indicator

The current performance standard for harvested blocks is defined in the provincial wide CWD strategy "A Short-term Strategy for Coarse Woody Debris Management in British Columbia's Forests" (BC MOF, 2000). This strategy's objectives include maintaining small, dispersed CWD piles where appropriate to provide denning habitat for furbearers such as pine martens. Other objectives include providing a range of decay and diameter class CWD, and providing both coniferous and deciduous CWD. Standing dead trees can be utilized or stubbed trees can create both CWD and wildlife habitat. The composition and disbursement of CWD and wildlife trees can be managed to reduce impacts from danger trees, wildfire and forest pests or forest disease hazards. Current levels of CWD in the DFA are expected to exceed the stated target for this indicator.

As of March 31, 2006, there is no established natural range for CWD in ecosystems on TFL30, therefore the target will be assumed to be the default amount noted in the Forest Planning and Practices Regulation, which is 4 pieces/ha of a certain size. It is also recognized by Canfor and BC Timber Sales that 4 pieces/ha is an unrealistic small amount and not likely sufficient for biodiversity. Nonetheless, this will occur until a natural range of CWD can be established. Work is currently underway to gather information for establishing a natural range of CWD in ecosystems that cover TFL30. This includes a literature review by June 2006, analyzing current data on CWD in natural forests by September 2006 and gathering new CWD data within natural stands December 2007, and developing a monitoring strategy for collecting data in managed stands by June 2007.

From April 1, 2005 to March 31, 2006, one block was logged greater than 15ha in size and this block did not specify CWD targets within the natural range.

Establishment of Targets and Future Practices

The target of 100% consistency with CWD requirements in operational plans and on the ground reflects the importance that Canfor and BC Timber Sales place on these indicators. Canfor and BC Timber Sales will continue to implement pre-work checklists, interim inspections, and final reviews to ensure targets have been met.

Over the next two years, Canfor and BCTS will work with the other licensees in the PGTSA to sample a range of ecosystems to gather information to benchmark the natural range of CWD and develop an integrated, cost-efficient strategy for CWD monitoring in managed stands.

Forecasting and Predicted Trends

The target of 100% consistency with site plans is expected. The exact level of success is difficult to forecast, as it is dependent on unpredictable factors such as human error. However, it is important to identify what the accepted targets mean to sustainable forest management. Coarse woody debris levels can influence ecosystem diversity values of SFM. Therefore, the use of a “what if scenario” is beneficial in identifying anticipated future trends for a measure such as this. As this measure currently has the target set at 100% consistency, one other scenario should be identified:

a) What if 50% of cutblocks were consistent with coarse woody debris requirements in operational plans?

If only 50% of cutblocks met coarse woody debris requirements in site plans there could be several negative impacts to ecosystem health and diversity. If insufficient CWD is retained, soil nutrient and moisture retention levels may decrease. Dispersed CWD provides shelter to small animals, as well as young seedlings that require shade and snow retention for survival. CWD piles are valuable denning sites for small furbearers whose numbers may decrease in their absence. By enhancing plant and animal habitat, CWD contributes to the overall health and diversity of the forest ecosystem. Therefore, Canfor and BCTS is committed to meeting the target of 100% consistency with operational plan requirements for CWD and ensuring these requirements are achieved in the cut blocks.

Monitoring and Reporting Procedures

Canfor and BC Timber Sales will conduct pre-work meetings prior to the start of projects, monitoring inspections as the work is progressing and final inspections once the work is complete to ensure the commitments specified in the Site Plan are met. These initial, interim and final checks are part of Canfor's and BC Timber Sales's Environment Management System (EMS). If a non-conformance with the Site Plan occurs in the field, this information will be recorded on an activity inspection form and then entered into an incident tracking database or other similar system so that issues can be tracked and mitigated as required.

The percentage of forest operations consistent with CWD requirements will be reported in the annual SFM Plan report for the operating year April 1st to March 31st.

Responsibility and Continuous Improvement Opportunities

Canfor and BC Timber Sales are responsible for monitoring, tracking and reporting coarse woody debris levels in their cutblocks. There are many areas for continuous improvement opportunities to maximize the ecological value of leaving CWD without increasing harvesting costs and adhering to current utilization standards. Improvement opportunities will be site specific and may utilize one or more of the following principles:

- Maintain a wide range of diameter and decay classes.
- CWD accumulations at roadside or landings should be minimized to the extent practical. Dispersing small CWD pile throughout blocks may be more beneficial to creating small mammal habitat.
- Retaining standing live/ dead trees and/or stubs on cutblocks can provide important sources of CWD recruitment
- Larger pieces of CWD are more valuable than smaller pieces.
- Retention of a variety of species is preferred.
- The ecological benefits of CWD within riparian areas can be particularly important.
- The retention of CWD should be harmonized with other silvicultural objectives.

As localized research provides data on the natural range of variability of CWD, targets may be updated to better reflect ecological units (NDU/BEC).

3.8 Caribou Habitat

| Statement of Indicator | Target and Variance |
|---|--|
| The amount in hectares of Caribou Ungulate Winter Range Habitat within TFL30. | Target: ≥ 7171 ha high value habitat ≥ 5459 ha corridor habitat Variance: 0% |

This indicator addresses the following CSA-SFM parameters:

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|---|
| <p>1) CCFM Criterion: Conservation of Biological Diversity CSA SFM Element : Species Diversity Value : Sustained populations of flora and fauna native to the DFA. Objective: Maintain habitat to support flora and fauna native to the DFA.</p> |
| <p>2) CCFM Criterion: Maintenance and Enhancement of Forest Ecosystem Conditions and Productivity. CSA SFM Element : Forest Ecosystem Productivity Value : Productive ecosystems. Objective: Maintain ecosystem conditions that are capable of supporting naturally occurring species.</p> |

Description of Indicator

Mountain caribou populations are highly sensitive to disturbance and predation within their habitat. Caribou numbers have been in decline due to a variety of causes. Disturbance within critical habitat can put severe downward pressure on productivity of caribou populations by increasing predation. This is mainly a result of an increase in forage vegetation that has attracted deer and moose that in turn have attracted predators such as wolves. Increased road access into critical habitat has also resulted in increased hunting pressure and disturbance from motorized and non-motorized recreation. Furthermore, the caribou's low rate of reproduction results in the population's inability to cope with these pressures. Caribou corridors are designed and maintained to access various seasonal habitat requirements (i.e. wintering, rutting, calving habitat), while also reducing the predator advantage of limiting the species to a specific place at a particular point in time.

With respect to the conservation of biological diversity, sustainable forest management must consider the flora and fauna native to the DFA and the potential impacts it can have on sensitive species. Having viable Mountain Caribou populations will also maintain forest ecosystem productivity, as they are a long established species that utilize certain plant communities and are prey for carnivores. Maintaining critical ecosystems that are capable of supporting Mountain Caribou is therefore crucial in meeting the objectives of this indicator.

An "Ungulate Winter Range (UWR)" is defined as an area that contains habitat that is necessary to meet the winter habitat requirements of an ungulate species (Government of B.C., 2001). Mountain Caribou were one of the ungulate species considered in the creation of UWR.

Current Practices and Status of Indicator

The B.C. Conservation Data Centre has placed Mountain Caribou on the provincial red list. The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) have listed caribou in the southern mountains of BC as threatened. All cutblocks in approved ungulate winter ranges will be consistent with the management guidelines in the approved Order for Ungulate Winter Range #U7-003. The order prescribes specific objectives to maintain Mountain Caribou winter range, to provide high suitability snow interception, cover, and foraging opportunities. Site plans prepared for these areas will reflect these objectives. More information on the order can be found at the Government of BC website http://www.env.gov.bc.ca/wld/ugw/ungulate_app.html. Caribou corridors are designed and maintained to access various seasonal habitat requirements (i.e. wintering, rutting, calving habitat), while also reducing the predator advantage of limiting the species to a specific place at a particular point in time. Maintaining identified travel corridors between the winter range habitat facilitates utilization of UWR.

Current status of the Caribou UWR within the DFA is shown in Table 7.

Table 7. Current Status of Caribou Habitat and Connectivity Corridors.

| Caribou Management Areas | Current Status | Target | Allowable Variance | Achieved By |
|--------------------------------|---|--|--------------------|-------------|
| High Value Caribou Habitat | Current status is 100% reserved from harvest. 7171 ha | Reserve 100% of the high value Caribou habitat (7171ha) from harvesting. | None | Annually |
| Caribou Connectivity Corridors | There are 5459 ha with a total of 20 BEC/NDT combinations for tracking. On average across all units currently 76% of the forested area is mature. | Maintain 5459 ha functional* caribou connectivity corridors. | None | Annually |

*functional is defined as at least 200m in width and 70% mature forest

Establishment of Targets and Future Practices

Due to the declining populations of Mountain Caribou in the DFA, Canfor and BC Timber Sales are committed to 100% of forest operations being consistent with approved Ungulate Winter Range Order #U7-003. Canfor and BC Timber Sales will continue to prepare and implement Site Plans consistent with the management objectives outlined in that Order. These objectives can be obtained in more detail from the above website. Canfor and BC Timber Sales are also committed to maintaining the designated travel corridors as outlined in Table 7.

Currently within the Prince George area there is a Caribou Recovery Implementation Group focused on developing a plan that had the best chance of leading to full recovery of mountain caribou within the Hart and Cariboo Mountains. Canfor and BC Timber Sales participate as a member on this group. A draft caribou recovery plan has been developed and sent to the provincial coordination body for review and socio-economic trade-offs analysis. Canfor and BC Timber Sales will monitor the process and provide regular update to the public advisory group.

Forecasting and Predicted Trends

All forest operations are expected to be consistent with Caribou Ungulate Winter Range requirements as identified in Site Plans. The exact level of consistency is difficult to forecast as conditions depend on variables such as site conditions and human error. However, it is important to identify what the accepted targets mean to SFM. Conservation of caribou winter range values will maintain species diversity within the DFA. Therefore, the use of a "what if scenario" is beneficial in identifying anticipated future trends for the indicator. As the indicator currently has a target of 100%, One other scenario should be identified:

- a) What if only 50 % consistency occurred between forest management operations and approved provincial Caribou Ungulate Winter Range requirements as identified in Site Plans?

Implementing only 50% of strategies to protect these values could lead to significant ecological, economic and social impacts. The precarious nature of Mountain Caribou populations means that failure to manage their winter range properly could decrease their numbers to unrecoverable levels. For example, harvesting and road construction performed in a manner inconsistent with the UWR orders could reduce forage opportunities that the caribou depend on for winter survival. Such activities would be inconsistent with the objective to maintain habitats that support flora and fauna native to the DFA. The decline of already low caribou populations would reduce forest productivity, as they are important consumers of arboreal and terrestrial lichens and a prey source for wolves, bears, and other carnivores.

The above "what if scenario" helps to identify some of the potential future impacts of not achieving the stated targets for this measure. Therefore, Canfor and BC Timber Sales will continue to ensure that 100% of all forest operations are consistent with caribou winter range requirements in operational plans. The indicator will remain at the target of 100% if all processes and protocols are followed.

Monitoring and Reporting Procedures

Canfor and BC Timber Sales will conduct pre-work meetings prior to the start of projects, monitoring inspections as the work is progressing and final inspections once the work is complete to ensure the commitments specified in the Site Plan are met. These initial, interim and final checks are part of Canfor's and BC Timber Sales' Environment Management System (EMS). If a non-conformance with the Site Plan occurs in the field, this

information will be recorded on an activity inspection form and then entered into an incident tracking database so issues can be tracked and mitigated as required.

The percentage of forest operations consistent with caribou winter range management requirements will be reported in the annual SFM Plan report for the operating year April 1st to March 31st.

Responsibility and Continuous Improvement Opportunities

Planners are responsible for being aware of the location of ungulate winter range as specified in Schedule A of the Order for Ungulate Winter Range # U7-003 and the management objectives outlined in that order. They are also responsible for being aware of corridor locations. Foresters responsible for preparing Site Plans must ensure the management activities prescribed in that document are consistent with the management objectives in the order. Harvesting supervisors are primarily responsible for ensuring Site Plan requirements are implemented in the field during harvesting operations. Silviculture foresters are also responsible for ensuring silviculture activities are consistent with ungulate winter range strategies. If problems in implementing the Site Plan objectives persist, corrective and preventative actions will be identified to improve consistency.

3.9 Species at Risk Notice / Orders & Habitat

| Indicator Statement | Target and Variance |
|--|--|
| The percentage of forest operations consistent with approved provincial Species at Risk Notice/ Orders requirements as identified in operational plans | Target: 100% Variance:0% |
| The amount of Species at Risk (wildlife) habitat (ha) within TFL30 | Target: TBD by June 2007 Variance: + 6 months |

This indicator addresses the following CSA-SFM parameters:

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| 1) CCFM Criterion: Conservation of Biological Diversity CSA SFM Element: Species Diversity Value: Sustainable populations of flora and fauna native to the DFA Objective: Maintain habitat to support flora and fauna native to the DFA |
| 2) CCFM Criterion: Maintenance and Enhancement of Forest Ecosystem Conditions and Productivity CSA SFM Element: Forest Ecosystem Productivity Value: Productive Ecosystems Objective: Maintain ecosystem conditions that are capable of supporting naturally occurring species. |

Description of Indicator

In the Defined Forest Area (DFA), mountain caribou (*Rangifer tarandus*), grizzly bear (*Ursus arctos*), fisher (*Martes pennanti*), and wolverine (*Gulo gulo*) are red- or blue- listed species that play a key role in the ecosystems and/or are of great socio-economic value.

The indicator is intended to monitor the compliance of forest operations to approved provincial Species at Risk Notice/ Orders requirements as identified in site plans. Being consistent with these requirements will ensure that the habitats that are required to support these Species at Risk will be maintained. Overall ecosystem productivity will be maintained by ensuring these species continue to play their roles in the healthy functioning of the DFA's forests.

Notices and Orders are legal entities created through Government Regulations. Currently, the DFA has no Species at Risk Notices and Orders.

Current Practices and Status of Indicator

Currently there are no Species at Risk Notices and Orders within the DFA. However it is important to ensure should the Species at Risk legislation apply to the DFA in the future Canfor and BC Timber Sales have strategies in place and will adhere to the requirements.

In an effort to develop management tools to predict and manage habitats of species at risk, Canfor over the last few years has created Species at Risk habitat maps over the DFA. This includes the following species: Caribou, Grizzly Bear, Fisher and Wolverine. Some of the predictive maps have been field-tested and results suggest that that it is possible to predict the winter distribution of fisher and wolverine using simple habitat criteria.

Over the next year meetings will occur with BCTS and the public advisory group to share the maps and to help identify critical habitat amounts for use in this indicator.

Establishment of Targets and Future Practices

The target of 100% of forest operations to be consistent with approved provincial Species at Risk Notice/ Orders requirements as identified in site plans was established in recognition of the high value that Canfor and BC Timber Sales place on Species at Risk management. Site Plans will continue to prescribe the most recent management techniques when Species at Risk are identified. Forestry operations will be supervised and reviewed should any SAR requirements in operational plans be required.

Species at Risk habitat maps along with other important social, economic and ecological information will be assembled to identify areas of exceptional conservation value on the DFA over the next year.

Forecasting and Predicted Trends

There are no known SAR habitat notices/orders identified within TFL30 hence 100% compliance is expected. However, Canfor has currently developed predictive SAR habitat maps and is currently field verifying them and it is likely in the near future that SAR habitat will be identified within the DFA. The long-term success of the species at risk objectives is difficult to predict, SAR may be identified by government within the DFA, weather events, climate and unique site characteristics will vary with time and space. However, it is important to identify what the accepted targets mean to SFM. Conservation of species at risk will maintain species diversity within the DFA. Therefore, the use of a "what if scenario" is beneficial in identifying anticipated future trends for the indicator. As the indicator currently has a target of 100%, one other scenario should be identified:

- a) What if only 50 % of forest operations were consistent with approved provincial Species at Risk Notice/ Orders requirements or predictive habitat areas by Canfor as identified in site plans?

If only 50% of forest operations were consistent with the SAR Notice/Orders requirements or predictive habitat areas as identified in operational plans, there could be significant ecological, economic and social impacts. Species at Risk, by their very definition, are vulnerable to disturbance or destruction of even small degrees. Ecologically, the loss or decline of any species at risk would reduce species diversity in the DFA. It would also reduce forest productivity by failing to maintain ecosystem conditions that are capable of supporting naturally occurring species. As Notices/ Orders are contained in legislation, failure to be consistent with their requirements could result in monetary penalties and costly litigious proceedings. In addition to these ecological and economic impacts, societal values may be reduced if only 50% of forest operations were consistent with approved provincial Species at Risk Notice/ Orders requirements as identified in operational plans. These species hold intrinsic worth for many people and any activity that threatens their status will meet with disapproval.

The above "what if scenario" helps to identify some of the potential future impacts of not achieving the stated targets for this measure. Therefore, Canfor and BC Timber Sales will continue to ensure that 100% of all forest operations are consistent with approved provincial Species at Risk Notice/ Orders requirements in site plans.

Monitoring and Reporting Procedures

Final harvest inspections will continue to be performed where consistency with approved provincial Species at Risk Notice/ Orders requirements as identified in site plans will be confirmed. Areas of inconsistency will be noted during these inspections and will be entered into an incident tracking database. Annually, inconsistencies will be reported in the SFMP annual report for the operating year of April 1st to March 31st

Responsibility and Continuous Improvement Opportunities

Planners are responsible for being aware of Species at Risk, their habitat and plant communities at risk. Foresters responsible for preparing Site Plans must ensure the management activities prescribed in that document are consistent with approved provincial Species at Risk Notice/ Orders requirements. Harvesting supervisors are primarily responsible for ensuring site plan requirements are implemented in the field during harvesting operations. Silviculture foresters are also responsible for ensuring silviculture activities are consistent with management requirements. If problems in implementing the Site Plan objectives persist, corrective and preventative actions will be identified to improve consistency. Improvements in operational plan implementation will be adopted if required. Continual improvement will also involve increasing knowledge of the interactions between harvesting and Species at Risk.

3.10 Riparian Management Areas

| Statement of Indicator | Target and Variance |
|---|-----------------------------|
| Percentage of forest operations consistent with riparian reserve requirements as identified in Site Plans. | Target: 100% Variance:0% |
| Percentage of forest operations consistent with riparian management requirements as identified in Site Plans. | Target: 100% Variance:0% |

This indicator addresses the following CSA-SFM parameters:

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| <p>1) CCFM Criterion: Conservation of Biological Diversity CSA SFM Element: Species Diversity Value: Sustained populations of flora and fauna native to the DFA. Objective: Maintain habitat to support flora and fauna native to the DFA</p> |
| <p>2) CCFM Criterion: Maintenance and Enhancement of Forest Ecosystem Conditions and Productivity. CSA SFM Element: Forest Ecosystem Productivity Value: Productive Ecosystems Objective: Maintain ecosystem conditions that are capable of supporting naturally occurring species.</p> |
| <p>3) CCFM Criterion: Conservation of Soil and Water Resources. CSA SFM Element: Water Quality and Quantity Value: Water Conservation Objective: Maintain water quality and water quantity in the Defined Forest Area</p> |
| <p>4) CCFM Criterion: Multiple Benefits to Society CSA SFM Element: Timber and Non-Timber Benefits Value: Short and long term benefits Objective: Maintain flow of non-timber benefits</p> |

Description of Indicator

Riparian areas are the zones adjacent to lakes, streams, and wetlands. They encompass the area covered by continuous high moisture content and the adjacent upland vegetation. In British Columbia legislation has identified Riparian Management Areas (RMAs) which consist of a Riparian Management Zone (RMZ) and, where required, a Riparian Reserve Zone (RRZ). The width of these zones is determined by attributes of streams, wetlands, lakes, and adjacent terrestrial ecosystems. The RRZ, if required, is immediately adjacent to the stream and is a no-harvest zone. RRZs are proposed and implemented in cutblocks and road construction areas, but they also continue in existence after harvest until a mature stand is re-established. This indicator will ensure that the RRZ that exists after harvesting activities is consistent with what was prescribed in the Site Plan or road construction design

Identifying and managing RRZs provides for the maintenance of species diversity by conserving riparian and aquatic environments, which are key for the survival of species (flora and fauna) dependent upon riparian conditions. In addition to providing critical habitat, RRZs function to conserve water quantity and quality features by reducing the risk induced by forest harvesting activities to waterbodies. By protecting species diversity and water quality, forest productivity is sustained, as both of these attributes are needed to maintain ecosystem conditions. Thus, the identification, assessment, and tracking of RRZ management is crucial to ensuring riparian areas and waterbodies are not unduly impacted.

Current Practices and Status of Indicator

Currently, riparian reserves are identified in the Site Plan for each cut block and through field assessment. A Site Plan is completed prior to harvesting for most areas within the DFA. They identify the type of riparian features present within or adjacent to a proposed harvest area, the size of the RMA (which includes the RRZ where applicable), and a prescription for specific activities within the RMZ to protect water quality and habitat values. EMS, pre-work forms are completed prior to harvesting to review all applicable RMA objectives, including RRZ locations. Canfor and BC Timber Sales also complete harvest inspections for all harvested areas to ensure riparian aspects contained in Site Plans are implemented in the field.

Currently 100% of Canfor and BCTS forest operations on the DFA are consistent with riparian reserve and riparian management requirements as identified in Site Plans.

Establishment of Targets and Future Practices

This indicator's target was developed through a review of past performance and legal requirements within the DFA. The target value of 100% has been established to ensure that all riparian management practices, specifically RRZ designation and management, continue to remain consistent with the Site Plan and other operational plans.

RRZs will continue to be documented at the Site Plan stage. All streams, wetlands, and lakes in or immediately adjacent to a planned harvest area will be classified in the field prior to the commencement of operations. Riparian Reserve Zones (RRZ) that meet or exceed the RRZ widths required by legislation will be located and clearly marked in the field. Site specific management practices will be included in Site Plans to maintain regulatory riparian reserve zones, and protect them from significant windthrow where needed.

Forecasting and Predicted Trends

Riparian management has historically been an important aspect of forest management within the DFA. Canfor has gained considerable experience in successfully identifying and protecting riparian features, and this success is predicted to continue. The exact level of consistency is not easy to quantifiably forecast over a defined time frame, as it is operational in nature. However, it is important to identify what the accepted targets mean to Sustainable Forest Management. To forecast this indicator, a "what if scenario" analysis can be used to help identify the importance of the stated target to overall SFM within the DFA. The following "what if scenario" consists of one scenario as the current target is set at 100%:

- a) What if less than 100% of blocks with Riparian Reserve Zones were consistent with the RRZ requirements as identified in the Site Plans?

Ecological values such as water quantity and quality, and stand level retention could be compromised if less than 100% of blocks with Riparian Reserve Zones were consistent with Site Plans. RRZs are an important part of forest management because they can impact many other forest resource values. They can provide a water body buffer and conserve aquatic habitat conditions such as shade requirements and water temperature. Maintaining stream bank stability within the reserve also protects water quantity and quality. As RRZs can contain upland habitat they can also contribute to stand level retention and overall biodiversity. If less than 100% of RRZs were implemented across the DFA, large areas of riparian habitat could be damaged, water quantity and quality could possibly decrease and stand level retention could decrease. These impacts could influence other economic and social values in the DFA such as tourism and recreation, and potentially reduce quality of life values by decreasing water quality.

Monitoring and Reporting Procedures

Final harvest inspections will continue to be performed where the riparian management area (including riparian reserves) consistency with site plan strategies will be confirmed. Areas of inconsistency will be noted during these inspections and will be entered into an incident tracking database. Annually, inconsistencies will be reported in the SFM Plan annual report for the operating year.

Responsibility and Continuous Improvement Opportunities

Canfor and BC Timber Sales are responsible for the implementation, monitoring, and tracking of their operational plans for their cutblocks in TFL30. Continual improvement will involve ongoing review of performance and the EMS will be adjusted where required as tied to pre-works, inspections, and training.

3.11 Personnel Trained to Identify Species at Risk & Sites of Biological Significance

| Indicator Statement | Target and Variance |
|---|------------------------------|
| Percentage of appropriate personnel trained to identify Species at Risk and their habitat | Target: 100% Variance: 0% |
| Percentage of appropriate personnel trained to identify Sites of Biological Significance | Target: 100% Variance: 0% |

This indicator addresses the following CSA-SFM parameter:

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| <p>1) CCFM Criterion : Conservation of Biological Diversity CSA SFM Element : Species Diversity Value: Sustainable populations of flora and fauna native to the DFA Objective: Maintain habitat to support flora and fauna</p> <p>2) CCFM Criterion: Conservation of Biological Diversity CSA SFM Element: Protected Areas and Sites of Special Biological Significance Value: Appropriate Management to Conserve Identified Sites of Special Biological Significance Objective: Sites of special biological significance are identified and appropriately managed</p> |
|--|

Description of Indicator

For the purposes of this SFM Plan Species at Risk are currently derived from the following sources:

- 1) Endangered or Threatened Species: As identified by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and the Species at Risk Act.
- 2) Red Listed Animal Species, Forested Plant Communities and Plants: Defined as taxa being considered for or already designated as extirpated, endangered or threatened. Extirpated taxa no longer exist in the wild in British Columbia, but they do occur elsewhere. Endangered taxa are facing imminent extirpation or extinction. Threatened taxa are likely to become endangered if limiting factors are not reversed.
- 3) Blue listed Animal Species and Forested Plant Communities: Defined as taxa considered being of Special Concern in British Columbia. Taxa of Special Concern have characteristics that make them particularly sensitive to human activities or natural events. Blue listed taxa are at a lower level of risk than red listed species.
- 4) Provincially Identified Wildlife: Refers to those Species at Risk and Regionally Important Wildlife that the Minister of Water, Land and Air Protection designates as requiring special management attention under the Forest and Range Practices Act.

Committee on the Status of Endangered Wildlife in Canada (COSEWIC): This committee is comprised of representatives from federal, provincial territorial and private agencies as well as independent experts in order to assign national status to species at risk in Canada.

Some Species at Risk in British Columbia are found in areas of forestry development. Sustainable forest management must consider their needs when preparing and implementing operational plans. Appropriate management of these species and their habitat is crucial in ensuring populations of flora and fauna are sustained in the DFA. In the DFA the application of landscape and stand level biodiversity management measures contribute to the maintenance of most biodiversity needs. These management approaches are "coarse filter"; i.e. they represent general measures to conserve a variety of wildlife species.

Sites of biological significance are sites that support red and blue listed plant communities and rare ecosystems. Sites of biological significance also include protected areas, which the Canadian Standards Association defines as "an area protected by legislation, regulation, or land-use policy to control the level of human occupancy or activities" (*Canadian Standards Association, 2002*). Protected areas can include national, provincial parks, multiple use management areas, and wildlife reserves. Sites of biological significance include such features as bald eagle or osprey nest, mineral licks, and avalanche chutes. Identification of these sites by planning staff is essential to their protection through the development of management strategies.

Appropriate personnel include key Canfor staff and contractors and BC Timber Sales staff and contractors directly involved in operational forest management activities. By implementing this indicator, forest management should become more aware of these unique sites and dramatically reduce accidental damage to these valuable features. As training programs are completed, Canfor and BC Timber Sales will significantly increase the

number of key personnel able to improve the protection of sites of biological significance. The protection of all forest components is an integral aspect of Sustainable Forest Management, which recognizes the value of all organisms to the health of the forest ecosystem.

This measure ensures that designated Species at Risk and Sites of Biological Significance are properly managed by ensuring the appropriate staff is trained.

Current Practices and State of Indicator

Training to identify Species at Risk for appropriate staff has been completed with refresher training planned. Newly hired staff will have training needs evaluated and receive training as required. Training records will be reviewed annually to identify training needs and to ensure appropriate personnel are trained.

Currently 100% (Canfor) and 96% (BCTS) appropriate staff and contractors have been trained on Species at Risk and Sites of Biological Significance within the DFA. Any outstanding staff requiring training will be addressed in June 2006.

Establishment of Targets and Future Practices

The target of 100% of appropriate personnel to be trained to identify Species at Risk was established to reflect the importance Canfor and BC Timber Sales place on managing for Species at Risk. Canfor will expand the list of staff to be trained in species at risk to include harvesting supervisors in 2006.

Forecasting and Predicted Trends

It is difficult to predict the success of achieving the targets for training key personnel over a defined time period. The target of 100% of the appropriate personnel being trained to identify Species at Risk and their habitat and Sites of Biological Significance will be maintained. However, it is important to identify what the accepted targets mean to SFM. In order to forecast this measure, a "what if scenario" analysis can be used to help identify the importance of the stated target to overall SFM within the DFA. The following "what if scenario" consists of one scenario as the current target is set at 100%:

- a) What if only 50% of key personnel were trained to identify Species at Risk or Site of Biological Significance?

If only half of the people directly involved in operational forest management activities are aware of Species at Risk then there is significant risk that these species or their habitat could inadvertently be disturbed. Many of these species are inconspicuous (particularly the plant species) and could be easily overlooked. Otherwise conscientious staff may plan road construction and harvesting that damage or destroys Species at Risk or Site of Biological Significance simply because they were unaware of them. By having 100% of key personnel trained to identify them the likelihood of inadvertent disturbance is dramatically reduced. Training will also ensure appropriate management strategies are implemented and ensure habitat is maintained to support flora and fauna in the DFA. The indicator percentage will be reported in the annual SFMP plan for the operating year.

Monitoring and Reporting Procedures

Canfor and BC Timber Sales will track training information through training records. Such records are currently maintained as part of EMS programs, and are updated as more staff completes the training program.

Responsibility and Continuous Improvement Opportunities

Canfor and BC Timber Sales are responsible for identifying the key personnel that requires training. The training program should evolve over time as more information is gained about the Species at Risk and Sites of Biological Significance in the DFA. This information may come from formal research, or may arise from anecdotal sources that may increase once more informed personnel are in the field.

3.12 Species at Risk & Sites of Biological Significance Management Strategies

| Statement of Indicator | Target and Variance |
|---|---|
| Percentage of forest operations consistent with Species at Risk management strategies applicable to TFL30 | Target: 100%, annually Variance: 0%. |
| Percentage of forest operations consistent with Site of Biological Significance management strategies applicable to TFL30 | Target: 100%, annually Variance: 0%. |

This indicator addresses the following CSA-SFM parameter:

| |
|--|
| <p>1) CCFM Criterion : Conservation of Biological Diversity CSA SFM Element : Species Diversity Value: Sustained populations of flora and fauna native to the DFA Objective: Maintain habitat to support flora and fauna native to the DFA</p> <p>2) CCFM Criterion: Conservation of Biological Diversity CSA SFM Element: Protected Areas and Sites of Special Biological Significance Value: Appropriate Management to Conserve Identified Sites of Special Biological Significance Objective: Sites of special biological significance are identified and appropriately managed</p> |
|--|

Description of Indicator

As mentioned previously Species at Risk are currently derived from the following sources:

- 1) Endangered or Threatened Species,
- 2) Red Listed Animal Species, Forested Plant Communities and Plants,
- 3) Blue listed Animal Species and Forested Plant Communities, and
- 4) Provincially Identified Wildlife.

Some Species at Risk in British Columbia are found in areas of forestry development. Sustainable forest management must consider their needs when preparing and implementing operational plans. Appropriate management of these species and their habitat is crucial in ensuring populations of flora and fauna are sustained in the DFA. In the DFA the application of landscape and stand level biodiversity management measures contribute to the maintenance of most biodiversity needs. These management approaches are "coarse filter"; i.e. they represent general measures to conserve a variety of wildlife species.

Sites of biological significance include such features as red and blue listed plant communities, rare ecosystems, protected areas, Caribou high value habitat, bald eagle or osprey nest, mineral licks, and avalanche chutes.

For more information on Species at Risk refers to the Conservation Data Center's "BC Species and Ecosystems Explorer" website: <http://www.env.gov.bc.ca/atrisk/toolintro.html>. This website is maintained by the Ministry of Environment.

Current Practices and Status of Indicator

Canfor has developed and implemented management strategies for Species at Risk and some Sites of Biological Significance on the DFA for two years on the DFA. BCTS has just completed a set of management strategies for their operations in the Prince George Forest District including TFL30.

Currently, there were no species at risk or sites of biological significance identified on site plans within the TFL30 DFA during the reporting period. The Registered Professional Biologist review of strategies was not required and species at risk management strategies have been updated.

Establishment of Targets and Future Practices

Most Species at Risk habitat requirements are sufficiently known to allow the development of special management areas, or prescribe activities that will not interfere with the well being of these species. The management strategies will be based on information already in place (e.g., National Recovery Teams of Environment Canada, IWMS Management Strategy) and on recent scientific literature. Management strategies will be implemented in operational plans such as site plans to ensure the protection of species' habitats.

Forecasting and Predicted Trends

Canfor and BC Timber Sales will continue to monitor for the presence of species at risk within the DFA. The management strategies are in place and will be reviewed on regular basis to determine their effectiveness

Monitoring and Reporting Procedures

An annual review of the management strategy implementation procedure will be completed and reported in the annual SFM Plan report for the operating year of April 1st to March 31st. The management strategies will be designed so a qualified professional can determine whether or not a particular strategy is implemented, not implemented, or is not applicable to the situation. Developed management strategies will be implemented within Forest Development Plans and eventually Forest Stewardship Plans as part of a continual improvement/research strategy for a particular species.

Responsibility and Continuous Improvement Opportunities

Planners will be responsible for being aware of species at risk, their habitat and plant communities at risk. Foresters responsible for preparing Site Plans must ensure the management activities prescribed in that document are consistent with the management objectives for that species. Harvesting supervisors are primarily responsible for ensuring Site Plan requirements are implemented in the field during harvesting operations. Silviculture foresters are also responsible for ensuring silviculture activities are consistent with management requirements. If problems in implementing the Site Plan objectives persist, corrective and preventative actions will be identified to improve consistency. Continual improvement will also involve increasing knowledge of the interactions between harvesting, Species at Risk, and Sites of Biological Significance.

3.13 Native Plant Species Diversity

| Statement of Indicator | Target and Variance |
|--|--|
| Native plant species diversity index by plant associations within the DFA. | Target: refer to Table 8 Variance: 0% |

This indicator addresses the following CSA-SFM parameters:

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|--|
| 1) CCFM Criterion: Conservation of Biological Diversity CSASFMElement: Species Diversity Value: Sustained populations of flora and fauna native to the DFA. Objective: Maintain habitat to support of flora and fauna native to the DFA |
|--|

Description of Indicator

In order for entire ecosystems to function effectively and be able to recover from disturbances, (e.g. forest harvesting activities), it is necessary to retain a natural diversity of elements, which are fundamental to ecosystem recovery. To a large extent, plant species provide the basic requirements and fundamental habitat for faunal species, contribute to the recycling of nutrients, and other life sustaining elements necessary to sustain the productive capacity of the ecosystem. As a result, ecosystem resilience is strengthened if a natural diversity of plant life can be maintained throughout the defined forest area (TFL30).

A plant diversity index is a mathematical measure of species diversity in a community. Diversity indices provide more information about community composition than simply species richness (i.e., the number of species present); they also take the relative abundance of different species into account. Diversity indices provide important information about rarity and commonness of species in a community. The ability to quantify diversity in this way is an important tool for biologists trying to understand community structure. (Source: Magurran, A. E. 1988. Ecological Diversity and its Measurement. Princeton University Press, Princeton, NJ). Ecologists generally believe that resilient ecosystems equal healthy ecosystems. Maintaining the natural levels of the plant index will show that we have a resilient and diverse landbase.

Current Practices and Status of Indicator

Currently only the top 5 plant associations representing approximately 80% of the landbase are being monitored. Current status and targets are shown in the following table. Current practices maintain strength in community plant composition across the defined forest area. Relative abundance of species, respective of management activities, has not been formally quantified across the identified site associations, however silviculture monitoring has provided strong indication that species composition and relative abundance are not negatively affected by forest management activities.

Current status for the plant diversity index is shown in Table 8.

Table 8. Current Status of Plant Stand Diversity Index.

| Grouped Site Association | Status as of March 31, 2006 | Shannon-Wiener Target | Achieved By |
|---------------------------------|------------------------------------|------------------------------|--------------------|
| Sxw – Devil's club | 2.511 | >2.029 | Annually |
| Sxw – Oak fern | 2.558 | >2.041 | Annually |
| Sxw – Huckleberry | 2.209 | >1.415 | Annually |
| Sxw – Horsetail | 2.225 | >2.222 | Annually |
| Bl – Oak fern | 2.426 | >1.968 | Annually |

Forecasting and Predicted Trends

As stated previously, a plant diversity index provides an indication of the overall health and resiliency of an ecosystem. This measure is not easy to quantifiably forecast over a defined time frame, but it is important to identify what the accepted target means to SFM. From a review of current literature, it is not certain what effects would occur if plant diversity were not maintained within the natural range of variation. Several studies currently exist that investigate monitoring of plant diversity and establishing ecological benchmarks, but results from these studies depend on years of analysis and therefore are not yet available. Future trends for plant diversity will be

forecasted in this SFMP based on a logical analysis of a "what if scenario". The "what if scenario" contains two potential scenarios for analysis in order to justify the chosen target:

- a) What if plant diversity is maintained above the natural range of variation?
- b) What if plant diversity falls below the natural range of variation?

The natural range of variation refers to a range of values for a specified attribute that exists in natural, undisturbed ecosystems. Maintaining elements in ecological systems within the natural range of variation helps to ensure that an ecosystem is not overly stressed by disturbance and has the ability to recover from that disturbance. Maintenance of plant diversity above the natural range of variation would likely not affect other elements in an ecosystem either positively or negatively. Natural systems operate at a certain level of efficiency and exceeding this natural range would presumably not generate a surplus of returns, as the ecosystem would eventually reach a maximum return level within its natural range.

On the other hand, maintaining plant diversity below the natural range of variation would likely have noticeable impacts on the disturbed ecosystem. As diversity of plants decreases it could potentially affect the quality of habitat for wildlife. Species tend to require certain attributes during their life cycle and if the diversity of an ecosystem is decreased, these attributes may not be available. This could lead to a decrease in quality of life for society due to reduced wildlife populations within the DFA.

As relatively little research currently exists regarding plant diversity in managed sites, targets for this measure were set based on existing NIVMA plot data within the DFA or in similar ecosystems outside the DFA. This plot information is an indication of the natural state of plant diversity within TFL30. By maintaining this natural range of variation, other important ecological, economic and social attributes will also exist and continue in a more sustainable manner. Therefore, Canfor and BC Timber Sales are committed to maintaining the plant diversity targets established through this SFMP

Monitoring and Reporting Procedures

On an annual basis the silviculture co-ordinator will report on field sampling and compilation results. The effectiveness of the sampling methods and relevance of the data relative to the objectives of this indicator will be assessed at this time.

Responsibility and Continuous Improvement Opportunities

Continual improvement for this measure will focus on obtaining more localized data for the DFA. Canfor and BC Timber Sales will review current data collection options in the adjacent districts, and determine the most effective way to collect and maintain this data in the long term.

3.14 Deciduous Tree Species

| Statement of Indicator | Target and Variance |
|--|--|
| Proportion of mature and old deciduous tree species by BEC subzone within the DFA. | Target: as per Table 9 Variance: 0% |

This indicator addresses the following CSA-SFM parameters:

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|--|
| 1) CCFM Criterion : Conservation of Biological Diversity CSA SFM Element : Species Diversity Value : Sustained populations of flora and fauna native to the DFA Objective : Maintain habitat to support flora and fauna native to the DFA |
|--|

Description of Indicator

Though not often considered of economic importance, deciduous tree species are important to the ecological balance of forest ecosystems. Deciduous tree species will often occur in early successional stands and provide numerous functions including contribution of nutrients to forest soils and providing habitat. As the forest progresses through its successional stages, the deciduous component will eventually decline, but will provide other important elements such as coarse woody debris and other habitat structures (i.e. standing wood debris).

The proportion of mature and old deciduous trees on the DFA is determined by comparing the amount of forested area covered by deciduous trees in the vegetation resource inventory to those that are defined as area occupied by coniferous trees. This indicator provides an estimate of the proportion of deciduous tree species within the DFA.

Current Practices and Status of Indicator

Wildlife tree patches and riparian reserves have been established within harvest areas since 1996 at an approximate ratio of 10 % of reserve area per hectare of harvested area. Many of the wildlife tree patches and riparian reserves provide mixtures of tree species including deciduous. Large-scale biodiversity reserves have been established in successive management plans to conserve non-timber forest values such as backcountry recreation and Mountain Caribou habitat. In an effort to increase the amount of large-scale reserves within lower elevation forests, the Tri Lakes Recreation Area and the McGregor River Management Zone were removed from the timber harvesting landbase. ... A large amount of deciduous trees are contained within the McGregor River Management Zone. Current status of this indicator remains unchanged from the information presented in the SFM Plan for TFL30, 2001.

Table 9. Current Status of Deciduous Tree Species.

| BEC subzone | Natural Stands Current Status * | Managed Stands Current Status * | Target Managed Stands*) | Achieved by |
|---------------------|--|--|---------------------------------|----------------------------------|
| SBS mk1 | 11% | 14% | >6% | Every 5 year re-inventory period |
| SBS wk1 | 7% | 15% | >5% | |
| ICH vk2 | 2% | 4% | >1% | |
| ESSF (all subzones) | 0% | 0% | 0% | |
| SBS vk | 2% | 8% | >2% | |

* % deciduous species based on basal

The current status of deciduous basal area in the ESSF BEC subzone is 0% in natural and managed stand due to the lack of deciduous species in high elevation ecosystems.

Establishment of Targets and Future of Indicator

The targets for this indicator were established through the VRI attribute file. The current status percentage was obtained utilizing the deciduous species composition by BEC subzone as listed in the VRI. This measure reflects Canfor's and BC Timber Sales' commitment to maintaining ecosystem diversity.

Forecasting and probable trends of indicator

No current forecasting has been done for this indicator. However, the proportion of deciduous tree species on the DFA will be forecasted in conjunction with the timber supply analysis (which is conducted every 5 years with

the submission of the management plan for the DFA). Generally, deciduous tree species are of little commercial value with regards to timber; therefore, the emphasis has been to promote the coniferous proportion of tree species on the landscape. However, the proportion of deciduous tree species on the DFA in managed stands remains higher than in the natural forest. It is anticipated that the deciduous tree species percentages in managed forests will decrease over time to the target limits due to natural succession (mortality) and silviculture treatments, which favour coniferous tree species.

Monitoring and Reporting Procedures

This indicator will be monitored in conjunction with the timber supply analysis completed every 5 years. The Planning Forester will be responsible for reporting the results in the SFMP annual report for the operating year.

Responsibility and Continuous Improvement Opportunities

The Planning Forester will be responsible for monitoring and reporting this measure. Reassessment of the effectiveness of the measure in achieving the objective will occur after each reinventory.

3.15 Effectiveness Monitoring Plans for Selected Wildlife Species and Ecosystem Resilience

| Statement of Indicator | Target and Variance |
|---|---|
| Effectiveness monitoring plans (wildlife) are developed and implemented for selected indicator species to keep common species common. | Target: December 31, 2007 Variance: + 3 months |
| Monitoring plan is developed and implemented for evaluating ecosystem resilience. | Target: December 31, 2007 Variance: + 3 months |

This indicator addresses the following CSA-SFM parameters:

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|--|
| 2) CCFM Criterion : Conservation of Biological Diversity CSA SFM Element : Species Diversity Value : Sustained populations of flora and fauna native to the DFA Objective : Maintain habitat to support flora and fauna native to the DFA |
|--|

Description of Indicator

To determine if productive populations of a selected species are present and well distributed throughout their habitat within the DFA, Canfor & BCTS will develop and implement an Effectiveness Monitoring Plan for one or more indicator species. These plans will help determine if current management practices and policies are successful in producing desired populations. An Effectiveness Monitoring Plan evaluates the success of meeting specific objectives and its primary focus is in monitoring the status of a population versus monitoring the habitat required to maintain the population. A successful Effectiveness Monitoring Plan is composed of the following elements (Madsen, S. et al. 1999):

- Identification of specific representative species (indicator species)
- Development of reliable and repeatable, cost effective monitoring processes
- Establishment of credible baseline population data
- Monitoring of long-term population changes
- Monitoring and sample designs
- Identification of logistical and statistical sampling problems
- Development and coordination of local and regional implementation and monitoring strategies
- Use of existing data where possible, and if dealing with migratory species, collaborate data with other jurisdictions
- Monitoring and sampling select geographical locations and populations
- Evaluation of the relationship between habitat use and condition, and population densities and trends through predictive models
- Identification of expected timelines, costs and outcomes

Current Practices and Status of Indicator

There are currently no Effectiveness Monitoring Plans for indicator species or ecosystem resilience that have been developed or implemented within the DFA.

Establishment of Targets and Future of Indicator

The target for this measure was set as December 31, 2007 because the Effectiveness Monitoring Plans for indicator species and ecosystem resilience are complex plans that will require substantial research, monitoring and sampling in order to be completed. A workplan will be developed and provided to the public advisory group for comments and involvement.

Forecasting and probable trends of indicator

These indicators differ from the majority of other indicators in that they are targeted at developing new monitoring plan for the TFL30 DFA. Therefore, the method used to forecast this measure will also differ from the typical “what if scenario” utilized for other measures. An analysis of the “what if scenario” will identify why the stated target was chosen for this measure and how it contributes to SFM in the TFL30 DFA.

As with previous “what if scenarios”, it is useful to identify two potential scenarios:

- a) What if Effectiveness Monitoring Plans for selected indicator species or ecosystem resilience were developed considerably earlier than December 31, 2007?
- b) What if Effectiveness Monitoring Plans for selected indicator species or ecosystem resilience were developed considerably later than December 31, 2007?

The first scenario suggests that Effectiveness Monitoring Plans for selected indicator species or ecosystem resilience would be developed much earlier than December 31, 2007. If these effectiveness plans were completed earlier than December 2007, then effectiveness monitoring would be implemented earlier and the likelihood of impact of forest development on selected wildlife and ecosystem resilience would be reduced.

If these effectiveness plans were completed later than December 2007, then effectiveness monitoring would be implemented later and the likelihood of impact of forest development on selected wildlife and ecosystem resilience would be increased. Given that forest development on the DFA is predicted to be very minimal over the next few years, there is likely very little impact of completing the effectiveness monitoring after the December 2007 date.

As previously mentioned, the idea of Effectiveness Monitoring Plans for indicator species was initiated to ensure that productive populations of a selected species are present and well distributed throughout their habitat within the DFA. Development of Effectiveness Monitoring Plans for indicator species will ensure that future forest practices do not exclude ecosystem and land base attributes that are vital to these species. Within the DFA, future trends will likely show that these plans have been developed and implemented where applicable. Once Effectiveness Monitoring Plans are developed and implemented, baseline data for indicator species will start to become available and future targets and trends will be easier to identify. Development of Effectiveness Monitoring Plans may involve predictive modeling and forecasting of population levels or ecosystem dynamics in relation to other SFM values. Until the indicator species are selected or ecosystem resilience is better defined and plans are created, these relationships will not be able to be modeled with any level of certainty.

Monitoring and Reporting Procedures

Canfor and BC Timber Sales will track progress on this indicator through updating the workplan. Progress will be provided to the public advisory group through emails and meetings.

Responsibility and Continuous Improvement Opportunities

Canfor and BC Timber Sales planners are responsible for developing and implementing the effectiveness monitoring workplan.

3.16 Distinct Habitat Types

| Statement of Indicator | Target and Variance |
|--|--|
| The percentage of area (ha) occupied by distinct habitat types in the non-harvesting landbase. | Target: >15% for common ecosystem groupings and \geq 50% for uncommon ecosystems Variance: 0% |

This indicator addresses the following CSA-SFM parameters:

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|--|
| 1) CCFM Criterion : Conservation of Biological Diversity CSA SFM Element : Genetic Diversity Value : Genetic Diversity Objective : Maintain natural genetic diversity |
| 2) CCFM Criterion : Maintenance and Enhancement of Forest Ecosystem Conditions and Productivity. CSA SFM Element : Forest Ecosystem Productivity Value : Productive forest ecosystems. Objective : Maintain forest ecosystem conditions that are capable of supporting naturally occurring species. |

Description of Indicator

Maintaining a representation of a full range of ecosystem types is a widely accepted strategy to conserve biodiversity in protected area networks (e.g. Margules and Pressey 2000) and is suggested for landscapes managed for forestry (e.g. Lindenmayer and Franklin 2002). Ecosystem representation is a coarse filter approach intended to ensure a proportion of ecologically distinct ecosystem (habitat) types are maintained within both the Non-timber Harvesting Land Base (NHLB) and the Timber Harvesting Land Base (THLB). Maintaining these natural habitat types will help to ensure a natural range of species and genetic diversity is maintained across the land base. Maintenance of ecosystems will occur primarily within the NHLB as management practices do not generally occur on this land base, thereby disrupting the natural patterns of the landscape. It is documented that maintaining representative ecosystems in an unmanaged state (e.g. NHLB) is important for three reasons (Wells et al. 2003):

- 1) they sustain poorly understood ecological functions and species habitat requirements,
- 2) they act as a precautionary buffer against errors in efforts intended to sustain species in the managed forest, and
- 3) they provide an ecological baseline against which the effects of human activities can be compared.

Maintenance of distinct habitat types on the NHLB is important for many reasons, including the use of natural landscapes in comparison to managed landscapes and the differences in values that each land base type shows with regards to the maintenance of distinct habitat types. Unmanaged stands play an important role as a precautionary buffer against errors in efforts intended to sustain species and a variety of genes within the managed forest. There is currently insufficient knowledge available regarding management practices that will ensure all species' requirements are met within managed stands. This is particularly true of poorly known or completely unknown organisms.

Current Practices and Status of Indicator

The TFL30 DFA contains two levels of unmanaged forest: 1) at the stand level, which includes wildlife tree patches (WTPs) and riparian reserve areas, and 2) at the landscape level, which includes provincial parks and other large reserve areas that have become part of the NHLB through strategic level processes.

The ecosystem representation analysis aggregates Biogeoclimatic Ecosystem Classification (BEC) site series values for the PGTSA into many coarse filter ecosystem groups (habitat types) based on relative similarities of their indicator plant communities. Using a netdown process, the forested land base was divided into the NHLB and the THLB. The TFL 30 DFA includes 31 distinct habitat types. These distinct habitat types were then overlaid onto the NHLB and THLB. A query of hectares within the NHLB and THLB associated with each habitat type was completed. The results are listed in the Figure ??.

When we examine the TFL in context with the District, 6 ecosystem groups are below 15% representation within the non-harvestable landbase see Table 10 with the summary and strategies that Canfor and BCTS will implement.

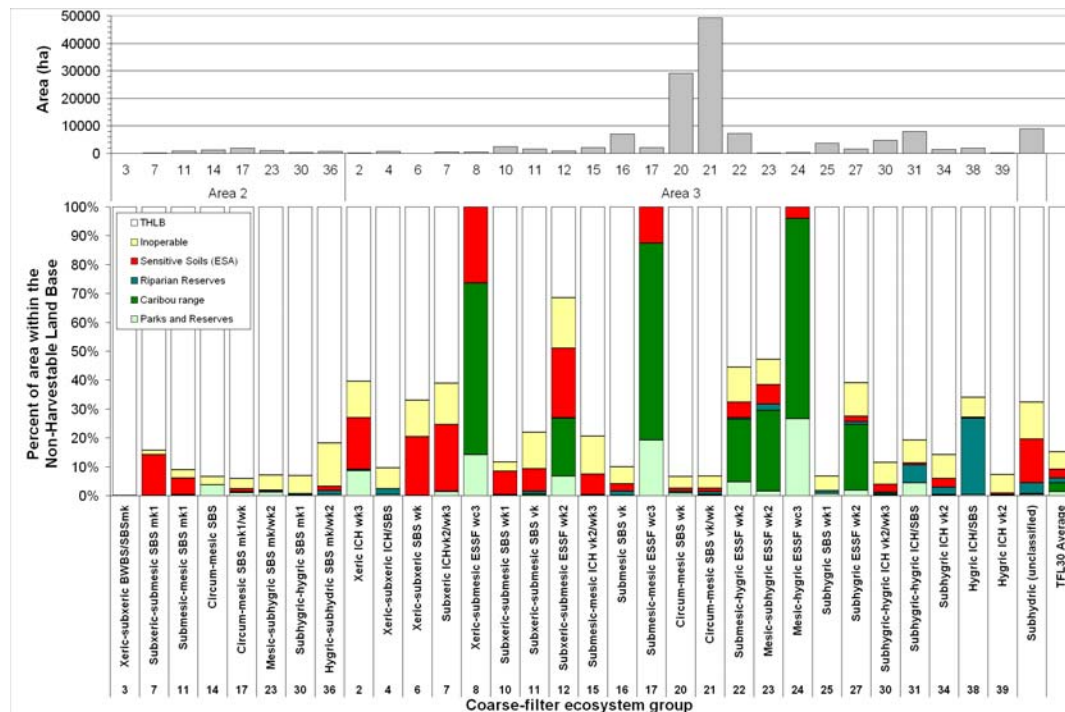


Figure 5: Representation of coarse-filter ecosystem groups in TFL30, showing the total area of each ecosystem group (THLB plus NHLB) and proportion of the total area that is in the NHLB.

Table 10 Distinct Habitats

| Distinct Habitat Grouping | % Area in TFL 30 | Total Ha NHLB | Representation in NHLB | Retention Strategy for areas found in the THLB |
|---------------------------|------------------|---------------|------------------------|--|
| 2-7 | 9 | 141 | 16% | Retain 100% |
| 2-23 | 4 | 995 | 7% | Retain 100% |
| 2-30 | 11 | 303 | 7% | Retain 100% |
| 3-4 | 12 | 621 | 10% | Retain 100% |
| 3-20 | 12 | 29,187 | 7% | WTP retention increased to 25% |
| 3-25 | 6 | 3,660 | 7% | WTP retention increased to 25% |

Establishment of Targets and Future of Indicator

The target for this indicator are applicable from June 30, 2007 forward, see table 10. The 6 Distinct Habitats outlined in table 10 and implementation of the strategy will be reported out on annually.

Forecasting and probable trends of indicator

This indicator was not forecasted by modeling as it was assumed to remain constant over the long term. However, it is important to identify what the accepted target means to SFM. The percent area of distinct habitat types contributes to wildlife habitat for a variety of species and overall biodiversity in the DFA. Therefore, the use of a “what if scenario” is beneficial in identifying anticipated future trends for a measure such as this. As all identified targets are listed as values greater than an identified percent, one other scenario should be analysed:

- a) What if no distinct habitat types were sustained within the DFA?

If no distinct habitat types were sustained within the DFA, ecological values could be at risk, and these could in turn affect economic and social values. Sustaining biological richness includes conservation of representative

ecosystems in order to sustain the natural range of variability of ecosystems across the land base. If distinct habitat types were not conserved, these ecosystems could potentially be lost and the overall diversity of ecosystems in the DFA would decrease. Loss of distinct habitat types could also potentially affect local wildlife populations that are dependent on these ecosystems. Loss of habitat could mean that wildlife would move out of the DFA to other habitat areas, or their survival rate may decrease if other habitat is not available. Decreases in these ecological values could potentially lead to decreases in economic benefits from the forest and result in decreases in social values such as quality of life.

Monitoring and Reporting Procedures

Canfor and BC Timber Sales will track progress on the retention strategies within each of the 6 Distinct Habitats that were identified as Uncommon or Common but under the 15% target. Progress will be provided to the public advisory group through annual reports and meetings.

Responsibility and Continuous Improvement Opportunities

Canfor and BC Timber Sales planners are responsible for developing and implementing the effectiveness monitoring workplan.

3.17 Chief Forester's Standards for Seed Use

| Indicator Statement | Target and Variance |
|---|------------------------------|
| Percent compliance with Chief Forester's Standards for Seed Use | Target: 100% Variance: 0% |

This indicator addresses the following CSA-SFM parameter:

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|--|
| 1) CCFM Criterion: Conservation of Biological Diversity CSA SFM Element: Genetic Diversity Value: Genetic Diversity Objective: Maintain natural genetic diversity |
|--|

Description of Indicator

The Chief Forester's Standards for Seed Use is a component of the Forest and Range Practices Act (FRPA). According to the Act, "The purpose of these standards is to maintain the identity, adaptability, diversity, and productivity of the Province's tree gene resources by:

- a) establishing criteria for the registration of seedlots and vegetative lots used to establish a stand under section 29 of the Act, and
- b) regulating the storage, selection, use and transfer of registered lots.

The Standards were established on November 20th, 2004 and became effective on April 1st, 2005. They are important to forest management as they directly affect the genetic makeup of the new plantations established within the DFA. Plantations will provide wildlife habitat and timber for future harvesting. Adherence to the Chief Foresters Standards is crucial for sustainable forest management as the standards are designed to establish healthy stands composed of ecologically and genetically appropriate trees. Planting unsuitable genetic stock could result in stands that will not meet future economic and ecological objectives.

Current Practices and Status of Indicator

Prior to the FRPA, standards for seed use existed for reforesting harvested areas. The FRPA's immediate predecessors were the standards in the *Seed and Vegetative Material Guidebook*, one of the guidebooks that were a component of the Forest Practices Code of British Columbia. The use of these standards resulted in licensees reforesting harvested areas using seedlings grown from seed genetically appropriate for those locations. Those standards have been in use until the FRPA became effective. Seed was collected either from natural stands (class B seed) or from seed orchards (class A) to create unique seedlots. A seedlot is a quantity of seed having uniformity of species, source, quality, and year of collection (*BC MOF, 1995a*). Canfor and BC Timber Sales would use a particular seedlot to grow seedlings to be planted in an area that met the conditions appropriate to that seedlot's genetic background. By choosing a seedlot that was suitable to the site it was to be planted in, the resulting plantation would be adapted to its site, local climate, and endemic forest health problems. Tracking and reporting the seedlots that were used for reforestation has been standard practice for all Licensees since 1988 when Licensees became responsible for reforestation activities on Crown land.

Currently, 100% of Canfor and BCTS areas planted within TFL30 from April 1, 2005 to March 31, 2006 were planted compliance with the Chief Forester standards for seed use.

Establishment of Targets and Future Practices

The importance of using appropriate seed and vegetative material for reforestation requires a target of 100% compliance with the Chief Forester's Standards for Seed Use. Information needed to determine appropriate seedlot selection will be tracked for each cut block and may be contained in the Site Plan. This information will include the seed planning zone for the block, elevation, latitude and longitude. Seed collection and registration will also adhere to the Standards. Forest management will have to consider seed supply prior to harvesting to ensure appropriate seed is available for reforestation. The Forest Stewardship Plan (FSPs) can be reviewed for location of future harvesting and the seed requirements determined for each planned cut block. By comparing existing seed supply with the cutblocks' seed requirements Canfor and BC Timber Sales can determine if seed needs to be collected or purchased.

Forecasting and Predicted Trends

The exact level of compliance is not easy to quantifiably forecast over a defined time frame, as it is operational in nature. However, it is important to identify what the accepted targets mean to Sustainable Forest Management. To forecast this indicator, a “what if scenario” analysis can be used to help identify the importance of the stated target to overall SFM within the DFA. The current target is set at 100% compliance with the Chief Forester's Standards for Seed Use. The following “what if scenario” is used in this analysis:

- a) What if only 50% of cutblocks were reforested with seedlings that met the Chief Forester's Standards for Seed Use?

Failure to use appropriate genetic material for reforestation could have several results. Seedlings may be more prone to climate damage such as frost and drought if seed is planted outside transfer guidelines. Opportunities for enhanced growth and wood quality may be lost if class A seed is not used where possible. If 50% of plantations were faced with higher mortality and poor growth performance due to improper genetic stock, the DFA would eventually be faced with a serious impact to timber supply. There may be ecological impacts as well. Plantations established with improper seedlots may not achieve the size, health, and structure needed to provide wildlife habitat. If high mortality and slow growth occurs, the area may be not recover its hydrologic functions and ability to control soil erosion.

The resulting economic and ecological impact could be dramatic. However, as Canfor and BC Timber Sales has considerable experience in meeting existing standards, no problems are anticipated for achieving target goals.

Monitoring and Reporting Procedures

Canfor and BC Timber Sales will monitor the elevation, longitude, and latitude of their planned cutblocks. While Canfor and BC Timber Sales may collect their own seed, the Ministry of Forests and Range's Surrey Tree Seed Centre is responsible for storing and managing seed and vegetative material. Canfor and BC Timber Sales can monitor available seed and vegetative material through the Seed Planning and Registry (SPAR) system and plan their sowing requests accordingly. All reforested cutblocks must have their seedlots tracked, a process that will be achieved using databases such as GENUS. The annual submission to the Crown through RESULTS will include the seedlot(s) used for each cut block planted during that operational year. Compliance with the target will be monitored through Canfor's and BC Timber Sales' databases, EMS checklists, "Plant Wizard" and internal audits. The results will be reported annually for the operating year April 1st to March 31st.

Responsibility and Continuous Improvement Opportunities

Canfor and BC Timber Sales are responsible for the monitoring, tracking, and reporting of the percentage of compliance with Chief Forester's Standards for Seed Use. Specifically, the Silviculture Forester must comply with the standards when planning sowing requests, planting prescriptions, cone collections, and registering seedlots. If compliance with the standards is not met the Ministry of Forests and Range will be notified. Use of GIS systems and improved databases may improve compliance by ensuring the best genetic material is matched to the sites planned for reforestation.

3.18 Wildlife Biodiversity Corridors

| Statement of Indicator | Target and Variance |
|---|--------------------------------------|
| The area in hectares in wildlife biodiversity corridors within the DFA. | Target: ≥ 82 ha Variance: 0% |

This indicator addresses the following CSA-SFM parameters:

- | |
|---|
| <p>1) CCFM Criterion: Maintenance and Enhancement of Forest Ecosystem Conditions and Productivity. CSA SFM Element: Forest Ecosystem Productivity Value: Productive ecosystems. Objective: Maintain ecosystem conditions that are capable of supporting naturally occurring species.</p> |
|---|

Description of Indicator

Distributing biodiversity reserves, at a variety of scales (small and large), throughout the managed forest will provide for a mix of vegetation age, structure, and composition that will support a variety of species habitat requirements. There are two levels of Biodiversity Reserves: The **stand level**, which include mapped wildlife tree patches and riparian reserve areas, and at the **landscape level**, which includes provincial parks and all other large reserve areas that are removed from the timber harvesting land base. This indicator provides for monitoring the amount of wildlife connectivity corridors throughout the DFA.

Canfor has been actively planning for wildlife movement corridors since 1999. These movement corridors provide a mosaic of early-, mid- and late-successional vegetation stages which, accommodates the needs of furbearers by giving them access to canopy cover, and promoting the use of openings and ecotones for foraging. The indicator is related to three SFM parameters and provides for ecosystem diversity, and genetic diversity and forest ecosystem productivity.

However, when natural or man-made disturbance is extensive and removes most of the canopy cover, animals associated with late-successional forests are affected by habitat change. In the light of this concern, Alpha Wildlife Research & Management was invited by Canfor to establish a connectivity corridor network to ensure animal movements across the landscape. The determination of the corridors was based on the composition and age of forest stands, as indicated on forestry maps, and their location within the landscape, i.e., riparian or upland, contiguous with other forested areas, etc. However, the adequacy of the corridor network to foster the movements of marten and other furbearers across the landscape is unknown.

Current Practices and Status of Indicator

Movement corridors are one of the key elements in Canfor's approach for managing biodiversity across landscapes. Canfor has contracted a Certified Wildlife Biologist to work in consultation with government agencies to design corridors throughout our operating areas. Movement corridors attempt to mimic natural patterns of connectivity and provide basic ecological linkages throughout the forest landscape. These corridors are both dynamic and flexible, adapting to changing demands and circumstances. Corridor characteristics vary in width, length and location in order to foster animal movement, while accounting for local biographic and physiographic landscape variation. Corridors may be managed as either permanent (usually involving non-productive land, wetlands, etc.) or shifting (involving harvestable stands). Riparian areas frequently contain the highest number of plant and animal species found in forests, and provides critical habitats, home ranges, and travel corridors for wildlife. Consequently large riparian "strings" (chains of wetlands and streams) are used as the primary ecological linkage throughout the landscapes. The movement corridors are identified on the 1:50,000 maps.

As of March 31, 2006 Canfor has established 82.36 ha of wildlife biodiversity corridors within the DFA.

Establishment of Targets and Future Practices

The amount of wildlife biodiversity movement corridors was established based on the current status on the DFA as of March 31, 2006.

Canfor and BC Timber Sales have established a target of zero ha variance to ensure some amounts of wildlife biodiversity corridors within the DFA. Movement corridors are not identified as an LRMP objective, but are mentioned throughout the LRMP as a strategy to manage for biodiversity and wildlife, particularly caribou. However these wildlife biodiversity do not include the caribou corridors previously mentioned in this SFM plan.

The following measures will be applied when harvesting is proposed within a corridor:

- As part of the adaptive nature of the corridors, they may be harvested and shifted across the landscape.
- Alternative silviculture systems may be used to provide sufficient crown closure and stand structure diversity to protect animal movement.

When there is a slight encroachment of the corridor, wildlife trees / riparian management areas are used to maintain structure in the more permanent corridors.

Forecasting and Predicted Trends

Canfor and BC Timber Sales will continue to maintain the small and large-scale biodiversity reserves within the DFA. Over the long-term, it is anticipated that there will be a continual increase of areas set aside for biodiversity reserves as greater knowledge is accumulated regarding the ecological requirements to conserve ecosystem biodiversity. Canfor and BC Timber Sales recognize that large scale biodiversity reserves, may be dynamic and will be assessed and taken into account during the timber supply analysis estimated to be every 5 years.

This indicator is not easy to quantifiably forecast, however, it is important to identify what the accepted targets mean to Sustainable Forest Management. To forecast this indicator, a “what if scenario” analysis can be used to help identify the importance of the stated target to overall SFM within the DFA. The current target is set at 89 ha of wildlife biodiversity corridor amount. The following “what if scenario” is used in this analysis:

- a) What if a target of ≤ 10 wildlife biodiversity corridor amount was used?

10 ha or less would represent a very small area to be set aside for wildlife movement. It is unlikely to add any value to wildlife species movement within the DFA.

Monitoring and Reporting Procedures

Canfor and BC Timber Sales will continue to work together and with the public advisory group to promote the use of landscape level reserves for wildlife biodiversity corridors. Canfor and BC Timber Sales will also maintain and update spatial data of all landscape-level reserves consistent with land-use and boundary designations from Provincial Agencies. Where significant changes to the designation of reserve areas or inventories have occurred, an automated GIS query is run to assess performance relative to the stated target. Performance relative to the stated target will be assessed and reported in the annual SFM Plan report for the operating year April 1st to March 31st.

The Planning Forester is responsible to monitor updates on wildlife biodiversity corridors within the DFA.

Responsibility and Continuous Improvement Opportunities

The Canfor and BCTS Planning Forester are responsible for working together and with the public advisory group on the CSA PAG process. Opportunities for developing new landscape level reserves such as wildlife biodiversity corridors will be made in consideration of other objectives (protected species, old growth protection, species habitats and expected movement) and the current mountain pine bark beetle infestation.

3.19 Site Index

| Statement of Indicator | Target and Variance |
|---|--|
| Site index by BEC subzone within the DFA. | Target: refer to Table 10 Variance: -5% |

This indicator addresses the following CSA-SFM parameters:

| |
|---|
| <p>1) CCFM Criterion: Maintenance and Enhancement of Forest Ecosystem Conditions and Productivity. CSA SFM Element : Forest Ecosystem Productivity. Value: Productive Ecosystems. Objective: Maintain ecosystem conditions that are capable of supporting naturally occurring species.</p> |
|---|

Description of Indicator

Site index is a relative measure of forest site quality. It is a measure of the height growth that can be expected in 50 years (after trees reach 1.3 m in height) by a particular tree species on a given site. Site index is used in timber supply planning to predict future stand volume. Site index is used in:

- 1) silviculture to help make sound management decisions,
- 2) forest inventory to describe site quality and update inventory databases,
- 3) in wildlife habitat modelling to estimate the amount and size of tree attributes.

Site index is very sensitive to changes in ecological site conditions including soil nutrients, and soil moisture.

Since site index is a physical measure of the growth of trees in a stand at a specified point in time, it provides a good method to evaluate if the productive capacity of the forest is being maintained. Even though trees are just one part of the forest ecosystem, the continued productivity of the trees at a sustained level contributes to the maintenance of productivity of other parts of the forest ecosystem. For example, the continued productivity of trees on the landbase provides habitat for flora and fauna and ensures the recycling of life sustaining elements (e.g. water, carbon, and nutrients) between the atmosphere and the soil. Site index is an integral component of timber supply modelling, as stands are modelled to grow either more or less volume dependant on site index. Maintaining site index consistent with targets in Table 10 is an important test of sustainable harvest levels.

Current Practices and Status of Indicator

Site index is a measure of potential productivity of a site and is impacted greatly depending upon site disturbance. Generally, if soil productivity is reduced (through compaction or loss of organic layers/nutrients) site productivity is also reduced (site index). Current status of spruce site index is shown in Table 10. Since spruce is the main tree species within natural and managed forests on the DFA, it was the species of choice to measure site index and estimate site productivity. Equations to calculate site index of other species (pine and subalpine fir) are contained with the report entitled "Potential Site Index estimates for the Major Commercial Tree Species on TFL 30" (Thrower and Associates, 2000).

Current status is shown in the following table.

Table 11. Current Status of Site Index.

| BEC Subzone | Elevation | Current Status (Average Spruce Site Index (m)) | Target (Average Spruce Site Index (m)) | Achieved By |
|--------------------------|------------------|---|---|------------------------------|
| SBSmk1, SBSvk, SBSwk1 | Less than 1000m | 23.0 | >20.8 | A 5-year rolling average. |
| SBSvk, SBSwk1 | More than 1000m | 23.1 | >19.6 | |
| ESSFwc3 | More than 1000m | 12.1 | >11.5 | |
| ESSFwk2 | More than 1000m | 21.6 | >13.7 | |
| ESSFwcp3 | More than 1000m | 6.0 | >5.7 | |
| ICHvk2 | More than 1000m | 22.4 | >20.2 | |

- bold numbers indicate updated average based on data collected during the reporting year

Establishment of Targets and Future Practices

The data used to calculate and monitor this indicator includes stand management surveys, growth and yield permanent sample plots, NIVMA monitoring plots and any other research/ operational studies that have growth intercept collected. Data in 1999-2004 was collated by BEC subzone for the site index calculation. The data mainly included pre 1987 silviculture surveys and recent free growing surveys, which allowed for growth intercept assessment of site index. The current status of this indicator (Table 10) in bold shows that it has been updated while the others remain unchanged from the information presented in the SFM Plan for TFL30, 2001 as there was not enough sample data

Forecasting and Predicted Trends

Forecasting the effects of changing site index was done by comparing the base case in the scenario planning project to the base case in Management Plan 9. Increasing the site index has a direct impact on many indicators including volume flow over time. As site index increases the timber volume flow over time increases particularly in the long term. Volume flow remains around 400,000 m³ for 100 years then increasing to 570,000 m³. As the site index decrease, so does the volume flow over time.

Canfor and BC Timber Sales will continue to maintain the site index within the targets specified by ensuring soil productivity is maintained. Canfor is currently managing such that site productivity and site quality is not at risk. Site index is calculated for suitable spruce trees from permanent sample plots and older silviculture surveys based on the growth intercept method and/or site index curves. These estimates will be used to calculate the average site index by BEC subzone.

Monitoring and Reporting Procedures

The silviculture forester is responsible for collating information and sample plot data as well as calculating the average site index. This is to be reported annually in the SFM Plan annual report for the operating year of April 1 to March 31.

Responsibility and Continuous Improvement Opportunities

As stated the silviculture forester is responsible for monitoring and reporting on this indicator. It is anticipated as more field data becomes available and research continues, the targets for site index will better reflect the true forest site quality.

3.20 Soil Conservation

| Statement of Indicator | Target and Variance |
|--|------------------------------|
| The percentage of forest operations consistent with soil conservation standards as identified in Site Plans. | Target: 100% Variance: 0% |

This indicator addresses the following CSA-SFM parameters:

- | |
|--|
| <p>1) CCFM Criterion: Conservation of Soil and Water Resources. CSA SFM Element: Conservation of Soil Resources. Value: Soil Conservation. Objective: The productive capacity of forest soils within the Timber Harvesting Land Base (THLB) is sustained.</p> |
|--|

Indicator Description

Conserving soil function and nutrition is crucial for sustainable forest management. To achieve this, forest operations have limits on the amount of soil disturbance they may create. Soil disturbance is defined in this SFM plan as disturbance caused by a forest practice on an area, including areas occupied by excavated or bladed trails of a temporary nature, areas occupied by corduroy trails, compacted areas, and areas of dispersed disturbance. Soil disturbance is expected to some extent from timber harvesting and silviculture activities, but these activities are held to soil conservation standards in Site Plans (where they are more commonly known as "soil disturbance limits"). The Site Plan prescribes strategies for each site to achieve activities and still remain within acceptable soil disturbance limits.

An objective of soil conservation standards is to ensure that site productivity is conserved and that impacts to other resource values are prevented or minimized (BC MOF 2001b). There are various soil disturbance hazards that must be considered when determining soil disturbance limits. Some of these include soil erosion, soil displacement, and soil compaction (BC MOF 2001b).

Excessive levels of soil disturbance can alter natural ecosystem functions such as water infiltration and drainage. It can also alter the type and health of the sites vegetation, potentially affecting wildlife habitat and the perceived public value of the area. The growth rate of trees can be reduced by excessive soil disturbance, which would affect the economic value derived from timber resources. With less ecosystem productivity and less economic return, social values in the DFA would also decrease due to reduced aesthetic appeal. Minimizing disturbance caused by various forestry activities conserves soil and the role it plays in the ecosystem. This indicator will measure the success of soil conservation standards achievement and that excessive soil disturbance is detected, reported, and corrected.

Current Practices and Status of Indicator

Soil information is collected as a component of site plan preparation, and soil conservation standards are established based on the soil hazards for that block. To be within those limits there are several soil conservation strategies currently used. Forest operations may be seasonally timed to minimize soil disturbance. For example, clayey soils are often harvested when frozen to reduce excessive compaction. EMS prework forms require equipment operators to be aware of soil conservation measures outlined in the site plans. Once an activity is complete the final EMS inspection assesses consistency with site plan guidelines. If required, temporary access structures are rehabilitated to the prescribed standards. Road construction within blocks is minimized, and low ground pressure equipment is used where very high soil hazards exist

Over the period April 1, 2005 to March 2006 from a review of completed EMS forms and the incident tracking system, 100% of Canfor and BCTS cutblocks and mechanical site preparation blocks having activity conducted on them were consistent with soil conservation targets in the Site Plans.

Establishment of Targets and Future Practices

The target of 100% of forest operations consistent with soil conservation standards demonstrates Canfor's and BC Timber Sales' commitment to maintaining forest ecosystem conditions.

Forecasting and Predicted Trends

The target for this indicator was set at 100% in order to maintain soil productivity and Canfor and BC Timber Sales will strive to meet this standard. Data sources for calculating and monitoring this indicator include Site Plans and completed EMS prework and final harvest inspection forms. Final harvest and site prep inspections will use an ocular survey to determine if the soil conservation standards stated in the site plan were met. If the initial ocular estimate indicates that site disturbance limits may have been exceeded, a transect soil disturbance survey as defined in the *Soil Conservation Survey Guidebook* will be completed on the site to determine if the limits have actually been exceeded and rehabilitation work may be required. Ocular survey information (and transect survey data if required) will be tracked so that annual reports can be generated. Results for this indicator will be included in the annual SFMP report for the operating year.

Responsibility and Continuous Improvement Opportunities

Canfor and BC Timber Sales harvesting supervisors and silviculture foresters are responsible for monitoring, tracking, and reporting this indicator. Specifically, Harvesting Supervisors are responsible for monitoring soil disturbance caused during harvesting activities, and Silviculture Foresters are responsible for silviculture activities.

3.21 Permanent Access Structures/Land Conversion

| Statement of Indicator | Target and Variance |
|--|---|
| The total percentage of forested land area occupied by permanent access structures. | Target: $\leq 3\%$ Variance: +1 % |
| The percentage of productive forested land area converted to other non-forested areas. | Target: $\leq 0.5\%$ Variance: + 0.2 % |

This indicator addresses the following CSA-SFM parameters:

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|--|
| 1) CCFM Criterion: Conservation of Soil and Water Resources. CSA SFM Element: Soil Quality and Quantity. Value: Soil Conservation. Objective: The productive capacity of forest soils within the Timber Harvesting Land Base (THLB) is sustained. |
| 2) CCFM Criterion: Multiple Benefits to Society. CSA SFM Element : Timber and Non-Timber Benefits Value : Short and long term benefits Objective: Maintaining a flow of non-timber benefits. |
| 3) CCFM Criterion: Forest Ecosystem Contributions to Global Ecological Cycles CSA SFM Element: Carbon Uptake and Storage Value: Uptake and storage of carbon in forest ecosystems Objective: Facilitate carbon storage within the DFA |

Description of Indicator

As defined by the BC Ministry of Forests and Range, a permanent access structure is "...a structure, including a road, bridge, landing, gravel pit or other similar structure, that provides access for timber harvesting, and is shown expressly or by necessary implication on a forest development plan, road permit or silviculture prescription as remaining operational after timber harvesting activities on the area are complete." Conversion to other uses would include any development project not covered under the above definition. This indicator is simply a measure of the proportion of area permanently removed from the productive forest as a result of development, in relation to the defined forest area.

As area is converted to permanent access structures (and other development), it is removed from the productive forest landbase and no longer contributes to some of the key elements of sustainable forest management. For example, as roads are constructed, the ability of the landbase to support forests that contribute to ecosystem diversity, productivity, and the conservation of soil and water resources, is either eliminated or reduced. Since permanent access structures remove productive forest area from the THLB, the increase in roads would decrease the future available timber supply and forestry economic returns. While there may be greater recreational access to the DFA, wildlife populations may decrease from an increase in hunting. Water quality and quantity may also decrease as more stream crossings are constructed, which may increase sedimentation. The cumulative effects of economic and environmental deterioration could impact social values, as society relies on a sustainable economy and environment. As such, minimizing the loss of the total forest landbase contributes to the sustainable forest management of the forest ecosystem on the defined forest area.

Current Practices and Status of Indicator

The following guidelines have been established to reduce forest land base conversion to permanent access structures

- Maintaining road widths to a minimum while providing for safe and effective access;
- Prescribing temporary road/trails (road/trail that is reclaimed to productive forest) within silviculture prescriptions where the road/trail will not be used for future access
- Using roadside harvesting methods (as opposed to landings) as a preferred method of access development.

Currently, there is 2.64% of the forested land base in permanent access structures within the DFA. From April 1, 2005 to March 31, 2006 only 0.002% (2.6 of 156,879 ha) of the productive forested land has been converted to non-forested areas.

Establishment of Targets and Future Practices

The current target of $\leq 3\%$ has been determined from current baseline data as indicated previously. The annual conversion target amount of 0.5% was annual estimate and will be re-evaluated after a couple years of reporting current status amounts. Canfor and BC Timber Sales expect that current Permanent Access Structures will be maintained or potentially decrease in the future and have used the current status as the target for this measure.

Forecasting and probable trends of indicator

The $\leq 3\%$ target is anticipated to be achieved by Canfor and BC Timber Sales. Future achievements are not easy to quantifiably forecast because this indicator is operational in nature. However, it is important to identify what the accepted target means to SFM. The amount of area that exists as permanent access contributes to ecological, economic and social values throughout the DFA. Therefore, the use of a "what if scenario" is beneficial in identifying anticipated future trends for an indicator such as this. As this target identifies a value equal to or less than 3.0%, one other scenario should be identified:

- a) What if considerably more than 3.0% of the forested landbase area was occupied by permanent access structures?

The predicted forecast outcomes would be the same for annual amount of conversion from a forested state to a non-forested state as noted below.

Impacts to all three aspects of SFM (ecological, economic, and social) could be expected if considerably more of the total forested landbase area within the THLB was in permanent access. Since permanent access structures remove productive forest area from the THLB, the increase in roads would decrease the future available timber supply and forestry economic returns. While there may be greater recreational access to the DFA, wildlife populations may decrease from an increase in hunting. Water quality and quantity may also decrease as more stream crossings are constructed, which may increase sedimentation. The cumulative effects of economic and environmental deterioration could impact social values, as society relies on a sustainable economy and environment.

It is not possible to have a forest industry without permanent access structures. However, this "what if scenario" analysis implies that a balance of values can be achieved through sustaining a minimal level of permanent access within the DFA. Canfor and BC Timber Sales are committed to achieving the identified target that, for now, is the maximum percentage.

Maintaining the proportion of area lost to permanent access structures is expected to remain at $\leq 3\%$. It is anticipated that once the entire forest has been accessed (one rotation), further access structures will be minimal, as the existing roads will be used in successive rotations. Conversion of the forest to other uses such as large-scale mining or agricultural use is not foreseeable.

Monitoring and Reporting Procedures

Forest cover information is owned and maintained by Canfor. The forest cover information is updated every 5 years in preparation for the timber supply analysis. Short term updates, for reporting purposes, are completed by combining the forest cover database and Canfor's and BC Timber Sales's spatially linked forest information system (GENUS). All permanent access structures (and other landbase attributes/deductions) are maintained in the forest cover database. Permanent access structures are also maintained in the GENUS data system.

Responsibility and Continuous Improvement Opportunities

Forest planners are responsible for ensuring that the over-all level of planned road development provides adequate road access but minimizes reductions to the productive forest land base. Operations personnel are responsible for developing roads and ensuring they do not exceed planned dimensions. There are several opportunities for continuous improvement of this indicator. Canfor and BC Timber Sales can standardize road class widths to the narrowest width safety and efficiency can permit. Existing permanent access structures can

be restored to the productive land base by rehabilitation methods. Future roads that are planned to be PAS can be designed and built to be temporary access structures that are returned to the net area to be reforested. Finally, alternative harvesting systems can be implemented that reduce the need for roads and landings in cut blocks.

3.22 Terrain Stability

| Statement of Indicator | Target and Variance |
|--|-------------------------------|
| The percentage of forest operations consistent with terrain management requirements as identified in Site Plans. | Target: 100 % Variance: 0% |

This indicator addresses the following CSA-SFM parameters:

- | |
|--|
| <p>1) CCFM Criterion : Conservation of Soil and Water Resources. CSA SFM Element : Soil Quality and Quantity Value: Soil Conservation. Objective: The productive capacity of forest soils within the Timber Harvesting Land Base (THLB) is sustained.</p> |
|--|

Indicator Description

It is recognised that mass wasting occurs through natural processes and is a normal part of the geological cycle; however, forest operations through harvesting and road construction can accelerate this process causing detrimental and long-term effects to soil productivity, water systems, and habitat. A terrain stability field assessment (TSFA) is an assessment that is carried out by a certified terrain stability specialist (usually a professional geo-scientist/ engineer) on areas determined at risk from mass wasting. The TSFA is intended to use professional judgement to determine levels of risk followed by recommendations to reduce or eliminate the occurrence of mass wasting as a result of forest operations. Forest operations that remain consistent with these recommendations will have fewer, if any mass wasting events caused by harvesting or road development. This indicator determines to what degree terrain stability requirements as outlined in the Site Plan are followed.

Current Practices and Status of Indicator

The entire TFL30 has been mapped with Level D Terrain Stability Overview Mapping which divides the DFA into three categories: Stable terrain; potentially unstable terrain; and unstable terrain. TSFA are completed on any harvest or road building proposal that lies within an area identified as either unstable or potentially unstable. The TSA is usually completed coincidentally with the site plan or road layout and design. The recommendations of the TSFA are then integrated into the site plan or road layout and design and carried-out in forest operations. To ensure the recommendations are carried through, Canfor and BC Timber Sales provide for internal checks prior to the development project (pre-work meeting), and after completion of the project (final inspection). Inconsistencies are reported through our Environmental Management System.

Over the last year, from a review of site plans, and road designs, no terrain stability field assessments were necessary.

Establishment of Target and Future Trends

Canfor and BC Timber Sales will continue to strive for 100% of forestry activities to be consistent with the terrain management requirements in site plans. This target was established to reflect Canfor's and BC Timber Sales' commitment to soil conservation in the DFA. The use of professional geo-scientists, engineers and other qualified personnel to conduct overview mapping and TSFA is expected to prevent future slope failure events resulting from forest operations

Forecasting and probable trends of the indicator

Canfor and BC Timber Sales will continue to ensure 100% of forest operations are consistent with the terrain stability requirements as laid out in site plans. The use of professional geo-scientists / engineers to conduct overview mapping and TSFA is expected to virtually eliminate future mass wasting events.

Monitoring and Reporting Procedures

This indicator will be monitored through the Level D Terrain Stability Overview Mapping system, review of the Site Plans, road layout and design documents. Where necessary Terrain Stability Assessments will take place. This information will be stored in the GENUS database and the percentage of indicator success for the operating year of April 1st to March 31st will be included in the annual SFMP report.

Responsibility and Continuous Improvement Opportunities

The area co-ordinator for Canfor and the Planning Forester for BC Timber Sales will be responsible for monitoring this indicator and reporting the findings in the annual report.

3.23 Reportable Spills

| Indicator Statement | Target and Variance |
|---|--|
| The number of "legally" reportable spills | Target: 0 reportable spills Variance: 0 |

This indicator addresses the following CSA-SFM parameters:

- | |
|--|
| <p>1) CCFM Criterion: Conservation of Soil and Water Resources CSA SFM Element: Soil Quality and Quantity Value: Soil Conservation Objective: The productive capacity of forest soils within the Timber Harvesting Land Base (THLB) is sustained.</p> |
|--|

Description of Indicator

The use of heavy equipment for forest operations can result in accidental petroleum/ antifreeze release into the environment. As these materials can be toxic to plants and animals, their proper containment contributes to sustainable forest management. By tracking spill occurrences, guidelines and procedures can be adjusted to improve weaknesses in their handling and transportation.

This indicator monitors the number of reportable spills as a result of forest operations within the DFA. A reportable spill is defined by the BC Environmental Management Act as outlined in Table 11.

Reportable Spill Substances and Volumes

| Product | Minimum Volume Spilled that Must be Reported to the PEP |
|-------------------------------|--|
| Petroleum Products | 100 litres |
| Petroleum Products into Water | Any Amount |
| Anti Freeze | 5 litres (mix) |
| Anti Freeze into Water | Any Amount |

Current Practices and Status of Indicator

The Spill Reporting Regulation of the *BC Environmental Management Act* requires any spill in excess of the reportable level for that substance be immediately reported by the person involved or an observer to the Provincial Emergency Program. Canfor and BC Timber Sales currently have procedures in place for reducing and reporting spills. EMS checklists and monitoring procedures require the proper storage, handling, and labelling of petroleum/ antifreeze products. Such measures include proper storage tank construction, the use of shut off valves, availability of spill kits, and the construction of berms where required. EMS plans also include the measures to be taken in the event of a spill.

Over the last year, no reportable spills were noted by Canfor or BCTS within the DFA.

Establishment of Targets and Future Practices

The establishment of the target was a result of the regulatory requirements and EMSs already in place. In addition to the legal requirements for 100% compliance, the target also recognizes the danger these substances pose to soil and water resources. Canfor and BC Timber Sales will continue to implement their EMS program for petroleum/anti-freeze spill prevention and if targets are not being met they will take a coordinated approach to determine procedures to do so. If a reportable spill occurs corrective and preventative actions will be identified to improve compliance. Equipment operators could receive additional training to reduce spills, and training to manage the spills if they do occur.

Forecasting and Predicted Trends

A reportable spill event is a major release of toxic materials into the environment and the subsequent damage to soil and water organisms could be extensive and costly to rehabilitate. The loss of such materials represents a significant failure in the management of petroleum and/or antifreeze, and represents serious flaws in current practices. Reportable spills would probably represent human error and suggest procedures need to be

improved. It is the intent of this indicator to monitor the success of current procedures and to reduce human errors to an absolute minimum.

It is predicted that Canfor and BC Timber Sales will have no legally reportable spills as a result of their forest operations within the DFA.

Monitoring and Reporting Procedures

Monitoring procedures are outlined in Canfor's and BC Timber Sales' standard operating procedures. The use of EMS checklists is designed to ensure fuel/antifreeze handling and storage is as per regulations and the EMS requirements. Spill events will be tracked through the EMS database and will be reported on in the annual SFMP report.

Responsibility and Continuous Improvement Opportunities

Canfor and BC Timber Sales are responsible for monitoring, tracking and reporting this indicator. If targets are not being met there are several areas for improvement. EMS monitoring procedures could be re-examined to reduce incidents. Where possible, new technology could be implemented to prevent or manage spills or alternatives to petroleum and antifreeze could be used in machinery. Equipment operators could receive additional training to reduce spills, and training to manage the spills if they do occur

3.24 Stream Crossing Quality Index

| Statement of Indicator | Target and Variance |
|---|--|
| Stream Crossing Quality Index (SCQI) for each watershed within the DFA. | Target: 100% of Sub-basins will have <10% SCQI high concerns Variance: -25% |

This indicator addresses the following CSA-SFM parameters:

- | |
|---|
| <p>1) CCFM Criterion: Conservation of Soil and Water Resources. CSA SFM Element: Water Quality and Quantity. Value: Water Conservation. Objective: Maintain water quality and water quantity in the Defined Forest Area (DFA).</p> |
|---|

Description of Indicator

Any stream crossing will impact water quality. By assessing the quality of the stream crossing and improving these over time, water quality impacts should be lessened. The conservation of water and soil resources is a key criterion in the framework for sustainable forest management. The stream/road interface has a large impact on water quality. Correct installation and ongoing maintenance to minimize the potential for sediment delivery into a stream is important in minimizing the impacts on water quality.

The stream crossing quality index is a measure, which indicates the potential of a stream crossing (permanent road stream crossings) to deliver sedimentation into the stream. Current watershed assessment procedures assume a high sedimentation delivery risk into the stream at each crossing. In practice some crossings have a higher sedimentation potential than others depending upon the type, age, location and soils. A high index indicates a high potential for the crossings to add sediment to the adjacent stream whereas a low index indicates that the crossings are being well managed to reduce the possibility of sediment entering the stream from the crossing. All streams receive the highest score until a stream crossing quality assessment is completed. This assumes that streams not assessed are potentially high-risk sediment sources and provides an incentive to complete the assessments in order to lower the index value. Assessments are made at the stream/road interface using a standardized scoring system (i.e. sum total score by watershed (Index) of crossing quality compared against tolerable limit)



Current Practices and Status of Indicator

The following progress has been made in the development of the stream crossing quality index since the original SFM plan (June 2001). P. Beaudry & Associates have developed a stream crossing quality index scoring methodology for Canfor. An inventory map of stream crossings has been produced for TFL30. An associated database of stream crossing information has been developed. Stream crossing sampling has been undertaken on an area covering 16 sub basins in the DFA.

Presently, fish streams and crossing structures are identified during site plan preparation. Under Canfor's and BC Timber Sales' EMS registration for the DFA, pre-work forms are completed for all projects including stream crossings, a fish stream crossing checklist is completed by contractors during installation, and an inspection form is completed by a Canfor or BC Timber Sales supervisor for all construction projects. Stream crossing installations are planned when conditions are favourable (i.e. fish windows). During installation of stream crossings, appropriate erosion control devices are installed. In addition, many stream crossing structures are inspected over time as part of Canfor's and BC Timber Sales' EMS.

Best practices for stream crossing include:

- 1) assessing quality of all crossings within the DFA using a crossing inventory map
- 2) repairing and maintaining all crossings based on SCQI limits by watershed (table 11)

Currently 73% of the Sub-basins have less than 10% of the SCQI in the high concern category. Additional restoration planning will occur in 2006 with implementation expected in the summer of 2007.

Table 12. Current Status of Stream Crossing Quality Index.

| Sub-Basin | Number of crossing surveyed | Target % Crossing high | Current Status % Crossings high |
|---------------|-----------------------------|------------------------|---------------------------------|
| Barney Creek | 70 | <10 % | 5.71 |
| East Olsson | 39 | <10 % | 5.13 |
| Herring | 67 | <10 % | 4.48 |
| Lower Olsson | 48 | <10 % | 14.89 |
| Residual D | 44 | <10 % | 2.27 |
| Upper Seebach | 154 | <10 % | 5.19 |
| Basin 4 | 48 | <10 % | 14.58 |
| Woodall | 96 | <10 % | 7.29 |
| Herring | 83 | <10 % | 10.84 |
| Upper Seebach | 300 | <10 % | 6.0* |
| East Seebach | 270 | <10 % | 6.3 |
| Averil | 157 | <10 % | 11.5 |
| Limestone | 60 | <10 % | 1.67 |
| Watershed 20 | 62 | <10 % | 21.0 |
| Basin A | 100 | <10 % | 5.0 |
| Watershed 25 | 22 | <10 % | 13.64 |
| Upper Olsson | 187 | <10 % | 3.2 |
| Lower Seebach | 52 | <10 % | 11.5 |
| Tay Creek | 35 | <10 % | 0.0 |
| Horn Creek | 173 | <10 % | 6.4 |
| Basin C | 54 | <10 % | 0.0 |
| Basin 7 | 13 | <10 % | 0.0 |
| Mokus Creek | 24 | <10 % | 8.3 |
| West Torpy | 114 | <10 % | 0.0 |
| Hubble Creek | 60 | <10 % | 0.0 |
| Basin F | 17 | <10 % | 0.0 |

* **Bold numbers** indicate the % crossing high changes during the reporting period

Establishment of Targets and Future Practices

The stream crossing quality index is a measure, of the potential a stream crossing has to deliver sedimentation into the stream. Identifying water quality concerns will enable planners to adopt these findings into their plans thus protecting water quality. Canfor's and BC Timber Sales' commitment to SQI assessments demonstrates their intention to reduce the potential negative effects of forest operations. Work continued in 2004 to assess further stream crossings in the remaining sub basins. In addition, restoration plans for specific sites were developed and implemented in 2005. This reduced the scores in four sub-basins as shown in bold in the table above.

Forecasting and Predicted Trends

Canfor and BC Timber Sales is committed to establishing SCQI for each watershed within the DFA. It is important to identify what the targets mean to SFM. Therefore, the use of a "what if Scenario" is beneficial in identifying anticipated future trends for the indicator. As the indicator currently has set a goal of SCQI for the entire DFA, one other scenario should be identified:

- a) What if only 50% of the sub-basins had <10% SCQI high concerns?

If only 50% of the sub-basins had <10% SCQI high concerns there could be significant ecological, economic and social impacts. Water quality could be diminished due to increased sedimentation, which would negatively

affect fish habitat. If sedimentation were to increase there would be legal obligations to restore the site, which would be costly. Reduction in water quality could cause the public to lose confidence in the SFM process, as there could be a reduction in recreational values.

The above "what if scenario" helps to identify some of the potential future impacts of not achieving the stated targets for this measure. Therefore Canfor and BC Timber Sales will continue to implement a stream crossing quality index and reduce the % of high concern stream crossing within the DFA

Monitoring and Reporting Procedures

Monitoring of the indicator will be collected through TRIM data for stream crossings, GIS (road construction), EMS stream crossing checklists and interior watershed assessment report on TFL30

Responsibility and Continuous Improvement Opportunities

The harvesting supervisor will be responsible for monitoring and reporting on the progress of this indicator. Canfor and BC Timber Sales will continue to develop restoration plans for stream crossings in the sub basins above the target of <10% of high concern. As anticipated some of the stream crossings will require some restoration work to reduce the risk of sediment delivery into the stream. The harvesting supervisor and strategic planning forester is also responsible for developing and implementing a long-term stream crossing inspection schedule.

3.25 Stream Crossings Installation

| Indicator Statement | Target and Variance |
|--|--|
| The percentage of new or deactivated stream crossings that maintain natural stream flow. | Target: 100%, Annually Variance: 0% |

This indicator addresses the following CSA-SFM parameters:

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|--|
| <p>1) CCFM Criterion: Conservation of Soil and Water Resources CSA SFM Element: Water Quality and Quantity Value: Water Conservation Objective: Maintain water quality in the Defined Forest Area (DFA)</p> |
|--|

Description of Indicator

When forest roads are constructed it is often necessary for roads to intersect with streams that may be fish-bearing. In order to maintain the number and diversity of fish species, stream crossings cannot be a barrier to their migration. As fish are also an important food source for other faunal species maintaining the natural stream flow contributes to the maintenance the entire stream ecosystem. Stream crossings must also consider the maximum flow rate (peak flow) that could occur in that stream. Careful consideration of culvert size must be made to ensure that the chosen culvert can manage natural high water events. If the culvert cannot handle peak flows, the water can back up and overflow the road, wash out the roadbed, and cause significant sedimentation and stream bank damage.

As roads are constructed to access areas for forest operations, it is necessary to build structures (i.e. culverts, bridges) where roads intersect with streams. This indicator will measure the success of maintaining fish movement and managing peak flow at all new stream crossings in the DFA.

Current Practices and status of Indicator

Streams and crossing structures are identified during site plan preparation. All streams are surveyed for fish bearing potential and qualified personnel determine probable peak flow volumes. The appropriate culvert size and installation procedures are then prescribed for the stream crossing. EMS pre-work forms are completed prior to their installation and the supervisor is required to perform a completion inspection of the structure. In addition, many stream crossing structures undergo scheduled inspections over time as part of EMS procedures.

Currently, from April 1, 2005 to March 31, 2006, 100% of all new Canfor and BCTS stream crossings maintained natural stream flow.

Establishment of Targets and Future Practices

Many stream crossings in the past did not fully consider fish passage or underestimated peak flow volumes. The result was barriers to fish movement and washed out roads. Canfor and BC Timber Sales recognize the importance of installing new stream crossings that maintain natural stream flows, and have set the target at 100% performance. Stream crossings will continue to be identified in Site Plans and procedures implemented to maintain their natural flow.

Forecasting and Predicted Trends

While is expected the indicator target will be achieved, the exact degree of success is not easy to quantifiably forecast. However, it is important to identify what the accepted target means to SFM. Maintaining natural processes such as stream flow is vital to sustainable forest management. A "what if scenario" analysis will identify the importance of the target for this indicator to SFM within the DFA. This indicator and the following "what if scenario" will help to substantiate the proposed target:

- a) What if only 50% of new stream crossings maintained natural stream flow?

The above scenario would immediately restrict fish movement of many streams in the DFA. This typically would be seen in cases where the down-stream end of the culvert is suspended above the water channel, a point above which fish could no longer migrate. Besides the obvious impact to the fish population, all species reliant on them upstream from the culvert would be affected. Installing an improper structure that could not manage

peak flows would inevitably lead to road flooding, possible washouts, and potentially large volumes of sediment entering the stream.

Reducing road failures and maintaining fish populations will help other values of sustainable forest management. Social values may be protected through the maintenance of recreational opportunities. Reducing road failures means the general public will have continued recreational access to many areas of the DFA. These recreational pursuits may include fishing that has been maintained through proper culvert installation. Economically, significant savings can be realized by avoiding costly harvesting delays from washed out roads.

Meeting the target objective can maintain ecological, social, and economic values of sustainable forest management. Therefore, Canfor and BC Timber Sales are committed to achieving the stated target for the indicator and long term trends are anticipated to show that all new stream crossings will maintain natural stream flows.

Monitoring and Reporting Procedures

The indicator will be monitored through EMS inspections and performance will be recorded in EMS database, GENUS. The results for this indicator will be included in the annual SFMP annual report for the operating period.

Responsibility and Continuous Improvement Opportunities

Canfor and BC Timber Sales are responsible to ensure that the objectives of this indicator are met. Specifically, Harvest Supervisors are responsible to oversee the installation of bridges and culverts through EMS checklists and final inspection reports. Use of Peak Flow Indices will increase the accuracy of predicting peak flows for watersheds, allowing correct sized culverts or bridges to be installed. Completing stream surveys will provide planners with information on which streams require fish management.

3.26 Peak Flow Index

| Statement of Indicator | Target and Variance |
|--|--|
| Peak flow index (PFI) for each watershed within the DFA. | Target: 100% Variance: - 10% variance (Table 12). |

This indicator addresses the following CSA-SFM parameters:

| |
|--|
| <p>1) CCFM Criterion: Conservation of Soil and Water Resources. CSA SFM Element : Water Quality and Quantity Value: Water Conservation Objective: Maintain water quality and water quantity in the Defined Forest Area (DFA).</p> |
|--|

Description of Indicator

Most hydrologic impacts occur during periods of the peak stream flow in a watershed. Peak flow is the maximum flow rate that occurs within a specified period of time, usually on an annual or event basis. In the interior of British Columbia, peak flows occur as the snowpack melts in the spring. After an area has been harvested, both winter snow accumulation and spring melt rates increase. This effect is less important at lower elevations, since the snow disappears before peak flow. Harvesting at high elevations will have the greatest impact and is, therefore, of most concern. As a result, areas harvested at different elevation are weighted differently in the calculation of peak flow index. The peak flow index measures the potential effect of harvested areas on water flow in a particular watershed. Conservation of water quality in the DFA includes maintenance of the watershed level conditions within natural ranges of variation to ensure that other uses of water are not adversely affected. The peak flow index provides a method to forecast and evaluate the potential effects of future harvesting plans, and to ensure that these harvested areas do not contribute to the degradation of the water resource.

Current Practices and Status of Indicator

During 1998, P. Beaudry & Associates and Environmental Dynamics completed a watershed assessment and sediment source survey on TFL 30. The objective of the exercise was to obtain information and develop a tool to assist in two planning activities:

- 1) development of a cost effective and environmentally sensible watershed restoration program; and
- 2) assist in the forest development plans process that will minimize or mitigate negative impacts to the aquatic resources.

TFL30 was subdivided into 27 independent watersheds and an assessment and sediment source survey was completed for each of the 27 units. P. Beaudry (1999) identified ten of the 27 watersheds as having a high level of hydrologic concern. Current status of peak flow index is shown in the following table. Seven watersheds (as identified by bolding) have current status very close to the target threshold. In these sensitive watersheds limited harvesting will occur until the PFI is below the target level. The watershed assessment has been used to develop watershed management objectives that are accounted for in the timber supply analysis in Management Plan 9. P. Beaudry, a local hydrologist identified the target threshold limits in the following table. This was done as an extension to the watershed assessment report.

Currently, 100% of the watersheds are below the targets as shown in Table 12.

Establishment of Targets and Future Practices

The target of all of the watersheds will have a peak flow index was established to reflect Canfor's and BC Timber Sales' commitment to maintaining water quality and flow. Canfor's and BC Timber Sales' objectives for the conservation of the fisheries resource and aquatic habitat include planning at the watershed level to minimize impacts to hydrological systems from forest harvesting and road construction through the maintenance of riparian management areas along riparian features. Management of watersheds and hydrologic systems is accomplished through managing the rate of harvest in each watershed (water quantity regulator), the amount of road construction (water quality regulator) and by establishing riparian management areas along riparian features (water quality and quantity regulators). Through the management of these three attributes, the quality and quantity of water within each watershed will remain within the limits of natural variation over time, and the species utilizing riparian / aquatic habitats will be maintained. Canfor and BC Timber Sales are relying on the three watershed attributes in this management plan to effectively manage and conserve the water resource.

Table 13. Current Status of Peak Flow Index.

| Watershed Name | PFI as of March 31/06 | Target | Forecasting Results Range over 260 yr. | Achieved by |
|----------------------|-----------------------|--------|--|-------------|
| Averil | 44 | < 65 | 28 to 18 | Annually |
| Barney Creek | 31 | < 37 | 42 to 10 | Annually |
| Basin 20 | 35 | < 65 | 40 to 29 | Annually |
| Basin 25 | 43 | < 80 | 37 to 10 | Annually |
| Basin 27 | 44 | < 80 | 41 to 13 | Annually |
| Basin 7 | 41 | < 80 | 35 to 15 | Annually |
| East Olsson | 36 | < 37 | 30 to 14 | Annually |
| Herring | 41 | < 65 | 37 to 19 | Annually |
| Horn | 27 | < 37 | 30 to 12 | Annually |
| Hubble | 29 | < 80 | 35 to 15 | Annually |
| Limestone | 46 | < 80 | 48 to 18 | Annually |
| Lower Olsson | 39 | < 65 | 37 to 19 | Annually |
| Mokus | 73 | < 90 | 58 to 16 | Annually |
| Residual A | 21 | < 65 | 28 to 18 | Annually |
| Residual B | 33 | < 37 | 30 to 14 | Annually |
| Residual C | 38 | < 65 | 37 to 18 | Annually |
| Residual D | 21 | < 37 | 23 to 15 | Annually |
| Residual E | 27 | < 65 | 35 to 16 | Annually |
| Residual F | 42 | < 65 | 37 to 18 | Annually |
| East Seebach | 29 | < 80 | 33 to 9 | Annually |
| Lower Seebach | 61 | < 65 | 38 to 18 | Annually |
| Upper Seebach | 34 | < 80 | 35 to 12 | Annually |
| Tay Creek | 33 | < 80 | 38 to 13 | Annually |
| Upper Olsson | 29 | < 80 | 35 to 12 | Annually |
| Basin 4 | 33 | < 65 | 35 to 16 | Annually |
| Woodall | 26 | < 37 | 23 to 15 | Annually |
| West Torpy | 16 | < 37 | 21 to 11 | Annually |

Establishment of Targets and Future Practices

The target of all of the watersheds will have a peak flow index was established to reflect Canfor's and BC Timber Sales' commitment to maintaining water quality and flow. Canfor's and BC Timber Sales' objectives for the conservation of the fisheries resource and aquatic habitat include planning at the watershed level to minimize impacts to hydrological systems from forest harvesting and road construction through the maintenance of riparian management areas along riparian features. Management of watersheds and hydrologic systems is accomplished through managing the rate of harvest in each watershed (water quantity regulator), the amount of road construction (water quality regulator) and by establishing riparian management areas along riparian features (water quality and quantity regulators). Through the management of these three attributes, the quality and quantity of water within each watershed will remain within the limits of natural variation over time, and the species utilizing riparian / aquatic habitats will be maintained. Canfor and BC Timber Sales are relying on the three watershed attributes in this management plan to effectively manage and conserve the water resource.

Forecasting and Predicted Trends

Forecasting of the peak flow index occurred as part of the original SFM plan in 2001 under the "Decision Scenario 1 – Biodiversity Guidebook" of the scenario planning project. Results of the forecasting (range of PFI) are shown in the Table 12. Generally, forecasting showed that the peak flow index was well below the target threshold level. In many cases, the forecasting predicts that PFI will fluctuate over time between the high and low value.

As forest harvesting continues within the watersheds, the expectation is that the Peak Flow Index will increase towards the threshold targets shown in Table 12. Watersheds where the Peak Flow Index is above or close to the target level require additional sensitivity analysis which will be conducted to identify the achieved by target dates.

Future forecasting of this indicator will occur as part of a sensitivity analysis over the long term (250 years) and during the timber supply analysis, which occurs in five-year intervals. Short-term projections of expected impact from the Forest Stewardship Plan (FSP) occur approximately every 2 years or as declared areas are developed.

Monitoring and Reporting Procedures

The planning forester will be responsible for ensuring that the targets are met. The interior watershed assessment report, forest cover mapping, TRIM data and the GENUS database will be used to monitor and determine the status for this measure.

Responsibility and Continuous Improvement Opportunities

Canfor and BC Timber Sales are responsible for reporting the results of maintaining PFI targets to the PAG. Canfor and BC Timber Sales will be responsible for updating their forest cover databases and Planners will be responsible for ensuring future harvesting will be responsive to PFI targets.

3.27 Sediment Occurrence Mitigation

| Indicator Statement | Target and Variance |
|---|---|
| The percentage of unnatural sediment occurrences where mitigating actions were taken. | Target: 100%, Annually Variance: -5% |

This indicator addresses the following CSA-SFM parameters:

| |
|---|
| 1) CCFM Criterion: Conservation of Soil and Water Resources CSA SFM Element: Water Quality and Quantity Value: Water Conservation Objective: Maintain water quality in the Defined Forest Area (DFA) |
|---|

Description of Indicator

Sedimentation can damage water bodies by degrading spawning beds, increasing turbidity, and reducing water depths. Forest management activities can create unnatural inputs of sedimentation into water bodies. This may occur at stream crossings (see previous indicator "Stream Crossing Management"), or from roads adjacent to water bodies. In addition to the effects of roads, sedimentation may also occur from slope failures that are a result of forestry activities. Once sedimentation occurrences are detected, mitigating actions are taken to stop further damage and to rehabilitate the site. Tracking these mitigation actions contributes to sustainable forest management by evaluating where, when and how sedimentation occurs and the success of correcting it.

Current Practices and status of Indicator

Sedimentation occurrences are detected by forestry personnel during stream crossing inspections, road inspections, silviculture activities, and other general activities. While in some situations the sites may have stabilized so that further sedimentation does not occur, in other cases mitigating actions may have to be conducted. This may involve re-contouring slopes, installing siltation fences, re-directing ditch lines, grass seeding, or deactivating roads.

No unnatural known sedimentation occurrences required mitigating actions between April 1, 2005 and March 31, 2006 in the DFA.

Establishment of Targets and Future Practices

Canfor and BCTS recognize the potential damage sedimentation can inflict on water bodies and are committed to taking mitigative actions on 100% of occurrences. A variance of 5% has been established to recognize those situations where it is not operationally feasible or practical to address sedimentation incidents. Licensees and BCTS will continue monitoring field operations to ensure sedimentation does not occur, and where necessary, will continue to take prompt action to mitigate its impact if it does.

Forecasting and Predicted Trends

The indicator target is expected to be achieved, but the exact degree of success is not easy to quantifiably forecast. However, it is important to identify what the accepted target means to SFM. Correcting unnatural sedimentation problems for all known occurrences is important to conserve water quality objectives. A "what if" scenario analysis will identify the importance of the target for this indicator to SFM within the DFA. This indicator and the following "what if" scenario will help to substantiate the proposed target:

- a) What if only 50% of known unnatural sedimentation occurrences received any corrective actions?

Ignoring half of the events where water bodies received sedimentation caused by forestry activities would be a willful disregard of sustainable forestry. Fish populations could be damaged by a decrease in water quality and destroyed spawning beds. Other aquatic organisms such as amphibians could suffer from the higher concentration of soil particles suspended in the water. In addition to the environmental degradation, social values would be impacted, as sedimentation is often an obvious and disturbing feature in the landscape. Failure to correct sedimentation problems could result in altered stream flows would be perceived as the careless disregard for forest and non-forest resources and should be avoided at every opportunity.

Canfor and BCTS are committed to achieving the stated target for the indicator and long term trends are anticipated to show that all known sedimentation events will be acted upon as required.

Monitoring and Reporting Procedures

All field personnel are responsible for detecting sedimentation occurrences, regardless of the location in the DFA. When sedimentation is detected, the Licensee/ BCTS that is responsible for the crossing, road, or cutblock will be notified. Canfor and BCTS will then take corrective actions and document the occurrence in their EMS database. The percentage of unnatural known sedimentation occurrences will be tracked, as well as the steps taken to rehabilitate damage. This percentage will be reported in the annual SFMP report for the operating year of April 1st to March 31st.

Responsibility and Continuous Improvement Opportunities

While Canfor and BCTS are responsible for correcting and tracking sedimentation on their areas of activity, it is the responsibility of all field personnel to be vigilant of sedimentation, even if it is occurring at another Licensee's site. Opportunities for improvement include training field personnel to recognize sedimentation occurrences and creating sedimentation response plans so that remediation can be quick and efficient.

3.28 Net Area Reforested

| Indicator Statement | Target and Variance |
|---|-------------------------------|
| Percentage of net area regenerated within 3 years after the completion of harvesting. | Target: 100% Variance: -5% |

This indicator addresses the following CSA-SFM parameters:

| |
|--|
| <p>1) CCFM Criterion: Forest Ecosystem Contributions to Global Ecological Cycles CSA SFM Element: Carbon Uptake and Storage Value: Uptake and storage of carbon in forest ecosystems Objective: Facilitate carbon uptake and storage within harvested areas</p> |
| <p>2) CCFM Criterion: Multiple Benefits to Society CSA SFM Element: Timber and Non-Timber Benefits Value: Short and long term benefits. Objective: Maintain a flow of timber benefits.</p> |

Description of Indicator

Prompt reforestation of harvested areas is a major component of sustainable forest management. In addition to creating wildlife habitat, maintaining hydrologic processes, and providing future timber for harvesting, regenerating cutblocks can absorb significant amounts of carbon through photosynthesis. Because young plantations are typically healthy and rapidly growing, they sequester more CO₂ through photosynthesis than they release through decay. By reducing atmospheric greenhouse gases such as CO₂, regenerating cutblocks can contribute to reducing climate change. The sooner cutblocks are regenerated after the completion of harvest the sooner this process can begin. Tracking plantation establishment will allow forest managers to assess how quickly and successfully regeneration is occurring, and if possible, adjust operations to reduce the time it takes to achieve reforestation.

Current Practices and Status of Indicator

Canfor and BC Timber Sales are legally required to declare the NAR (Net Area Reforestable) of a cutblock regenerated by the date defined in the Site Plan. The NAR is the area of a cut block that must be reforested, and does not include permanent access structures (roads), wildlife tree patches, and areas of wetlands or rock. The date regeneration must be accomplished by is called the "regen" declaration date and varies depending upon the ecosystem association it is applied to. Based on ecosystem associations the regen period may be 3, 7 or more years, but most cutblocks are declared to be reforested before the regen period has expired. This prompt reforestation allows seedlings to become established before competing vegetation becomes too developed on the site. This indicator does not apply to small bark beetle regulation (BBR) blocks.

Currently, 100% (1717.6 of 1727.6ha) of net areas to be reforested have been regenerated within 3 years after the completion of harvesting by Canfor and 22% (21.4 of 97.4ha) by BCTS. None of the blocks are in non-compliance with regeneration delay due dates.

Establishment of Targets and Future Practices

Canfor has determined that 3 years is sufficient time for a cut block to be planted once harvesting is complete. Within those 3 years site preparation may be required, such as disc trenching or mounding, and seedlings have to be grown that are appropriate for that site. Compared to many Site Plans' prescribed regeneration dates, 3 years is an aggressive target to be achieved. However, events may occur that result in some cutblocks not being reforested within this period. Planting may be postponed as adjacent stands are harvested to salvage pine beetle killed timber. There may be insufficient seedlings to complete planting, or new plantations may suffer mortality from pests or extreme weather. In light of these possible events, a variance of -5% has been established.

To achieve this target, forestry operations have to be completed quickly and efficiently. Harvesting schedules, piling and burning of debris and road deactivation schedules all have to consider the targeted planting date. Silviculture foresters will have to ensure site preparation and seedling acquisition is timed to meet the 3-year target date.

Forecasting and Predicted Trends

The indicator target is achievable based on past performance by Canfor and BC Timber Sales, and the objective is anticipated to be met. However, while cutblocks may be planned to be regenerated within 3 years from the completion of harvest, the exact level of success that will be achieved is difficult to forecast. Factors such as weather, seedling availability, and ongoing beetle salvage operations may disrupt planting schedules. It is important to identify what the accepted target means to SFM. The prompt reforestation of harvested areas is vital for maintaining forest sustainability and reducing atmospheric CO₂. A “what if scenario” analysis will identify the importance of the target for this indicator:

- a) What if only 50% of harvested areas were reforested within 3 years of harvesting?

Allowing 50% of harvested areas to remain unplanted after 3 years may delay the uptake of atmospheric carbon, reducing efforts to fight climate change. Waiting beyond 3 years could allow competing vegetation to become well established reducing seedling performance once they are planted. Delaying regeneration could also be detrimental to those plants and animals dependent on forest ecosystems. In the long term, timber supply may be reduced by an excessive lag between harvesting and reforestation thereby affecting economic and social values in the DFA.

Monitoring and Reporting Procedure

Planting and survey data is monitored through Canfor's and BC Timber Sales' database GENUS. All silviculture activities, including declarations of meeting regeneration dates and planting, are reported annually to the Ministry of Forests and Range through the RESULTS program. The indicator percentage will be reported in the annual SFMP report for the operational year April 1st to March 31st.

Responsibility and Continuous Improvement Opportunities

The Silviculture Forester is responsible for the monitoring, tracking, and reporting of this indicator. There are some opportunities for continual improvement. Canfor and BC Timber Sales may consider conducting regeneration surveys at the time of planting to reduce the time to declare regeneration. Scheduling silviculture activities should take every opportunity to reduce the time between activities. For example, site preparation could occur directly after harvesting instead of waiting for the following year.

3.29 Meeting Free Growing Dates

| <i>Indicator Statement</i> | <i>Target and Variance</i> |
|---|------------------------------|
| Percentage of cut block area that meets Free Growing requirements as identified in Site Plans | Target: 100% Variance: 0% |

This indicator addresses the following CSA-SFM parameters:

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|--|
| <p>1) CCFM Criterion: Forest Ecosystem Contributions to Global Ecological Cycles CSA SFM Element: Carbon Uptake and Storage Value: Uptake and storage of carbon in forest ecosystems Objective: Facilitate carbon uptake and storage within harvested areas</p> |
| <p>2) CCFM Criterion: Multiple Benefits to Society CSA SFM Element: Timber and non-timber benefits. Value: Short and long term benefits Objective: Maintain a flow of timber benefits</p> |

Description of Indicator

A free growing stand is a stand of healthy trees of a commercially valuable species, the growth of which is not impeded by competition from plants, shrubs or other trees (BC MOF 1995b). A free growing assessment is conducted on stands based on the time frame indicated in the Site Plan. The early and late free growing dates are established based on the biogeoclimatic classification of the site and the tree species prescribed for planting after harvest. In order to fulfil mandates outlined in legislation, standards are set for establishing a crop of trees that will encourage maximum productivity of the forest resource (BC MOF 1995b). The free growing survey assesses the fulfilment of a Licensee's obligation to the Crown for reforestation.

This indicator measures the percentage of harvested blocks that meet free growing obligations across the DFA. While this percentage is important in a legal sense, as Canfor and BC Timber Sales have an obligation to meet free growing standards, it is also important for sustainable forest management. Stands that meet free growing standards are deemed to have reached a stage where their continued presence and development is more assured. Their numbers, health, and height make them less vulnerable to competition and more likely to reach maturity. Producing a free to grow stand means that the forest ecosystem will continue to develop. It means that carbon sequestration will also continue, locking up additional green house gases as cellulose in the growing plantation. As more blocks reach free to grow status, they could make a local contribution to reducing global climate change.

Current Practices and Status of Indicator

Free growing dates and standards for each harvested stand are recorded and maintained in Canfor's and BC Timber Sales' database, GENUS. Each cut block is surveyed prior to the late free growing date to ensure the free growing standards have been met and that the stand is at target heights, fully stocked, and healthy. The results of all surveys are summarized and maintained in Canfor's and BC Timber Sales' databases. If a survey indicates that the stand has not achieved free growing by the required date, corrective actions will be prescribed immediately in order to remedy the situation while still meeting the late free growing deadlines. If all free growing standards are met, Canfor and BC Timber Sales make an application to the Ministry of Forests and Range for the cut block to revert to the Crown's responsibility.

From 1987 to present, 100% of Canfor harvested areas have met the late free growing dates as outlined in the site plans. BCTS had no late free growing dates due during the April, 2005 to March 31, 2006 reporting period.

Establishment of Targets and Future Practices

The established target of 100% for this indicator ensures that all harvested areas within the DFA achieve free to grow status within the prescribed timelines. Once cutblocks reach the free to grow standard the area reverts back to Crown land and Canfor and BC Timber Sales obligations are considered complete. A performance target of 100% is achievable and it is in Canfor and BC Timber Sales best interest as the completion of silviculture obligations are an important financial benefit. Until the Crown assumes responsibility for a plantation,

Canfor and BC Timber Sales must bear the costs of managing that stand, including surveys, thinning, brushing, and, if necessary, replanting.

Forecasting and Predicted Trends

While it is anticipated that 100% of blocks will meet the indicator target, the exact level of success is not easy to forecast. However, it is important to identify what the accepted target means to SFM. By ensuring harvested blocks within the DFA meet the prescribed free growing date, forest managers are ensuring that the productive capability of the land base is conserved and that the forest resource will be available for future use. Use of a “what if scenario” is beneficial in helping to identify anticipated future trends for an indicator such as this. As the stated target for this measure is 100%, one other potential scenario will be analyzed:

a) What if only 50% of harvested blocks met the prescribed free growing date?

If only half of harvested blocks met the prescribed free growing date the sustainability of the timber resource within the DFA would be in peril. Free growing stands are considered to have reached a state where they can continue to grow in a healthy manner, reasonably free of competition. Stands that have not reached this state may be suffering high pest mortality or competition from other species that may prevent them from becoming commercially viable crop trees. Quite simply, 50% fewer free growing blocks means there will be less regenerated area compared to our assumption used in determining the current allowable cut level and would likely decrease the future allowable cut amounts.

In addition to economic benefits, free growing stands contribute to ecological values of SFM. Achievement of free growing stands ensures that the nutrients and productivity of the site have not been significantly altered from harvest and that the land area has not been converted to another type of vegetative cover. Wildlife dependent on healthy forests also benefits from the creation of free growing stands. A free growing stand also represents an area that is actively storing carbon and contributing to the removal of carbon dioxide from the atmosphere. Having 100% of blocks meeting their free growing date means that the DFA can make a sizeable contribution in the effort to reduce atmospheric carbon dioxide.

In the long-term, failing to achieve the identified target for this measure could negatively impact economic, ecological and social values across the DFA. As the timber supply and the amount of healthy regenerating forests decline, the industries, communities and natural processes that depend on them will also suffer. In the TFL30 DFA, trends for the immediate future will likely show that free growing objectives will continue to be achieved on 100% of harvested blocks.

Monitoring and Reporting Procedures

Silviculture obligations such as free growing dates for harvested stands are recorded and maintained in Canfor’s and BC Timber Sales’ database, GENUS. Once free to grow status has been achieved, Canfor and BC Timber Sales must submit a report to the Ministry of Forests and Range that will update the status of the cut block on the government database. These reports must be submitted on an annual basis for all blocks surveyed that operating year. The indicator percentage will be included in the annual SFM Plan report for the operating year April 1st to March 31st.

Responsibility and Continuous Improvement Opportunities

It is the Silviculture Forester’s responsibility to monitor, track and report this indicator. Opportunities for continuous improvement could be found in the administration of silviculture activities. Currently, non-conformances generally relates to data base tracking, survey methodology and reporting delays. These issues will be reviewed and, if necessary, a resulting action plan will be developed and implemented to minimize future negative impacts to this indicator.

3.30 Carbon Storage

| Statement of Indicator | Target and Variance |
|---|--|
| The amount of carbon stored in forest ecosystems within the DFA | Target: > 150 tonnes/ha Variance: 0 tonnes/ha |

This indicator addresses the following CSA-SFM parameters:

- | |
|---|
| <p>1) CCFM Criterion: Forest Ecosystem Contributions to Global Ecological Cycles CSA SFM Element: Carbon Uptake and Storage Value: Uptake and storage of carbon in forest ecosystems Objective: Facilitate carbon storage within the DFA</p> |
|---|

Indicator Description

As a result of the 1997 Kyoto Protocol, international attention has been focused on the issue of global greenhouse gas emissions. This has placed considerable pressure on the public and private sectors of society to account for the role that forests play in carbon storage and the reduction of global carbon dioxide emissions. The capacity of forest ecosystems to sequester carbon is therefore considered an important environmental value and as such has been included as an aspect of SFM within this plan. In order for carbon sequestration to be effectively represented within an ecosystem level management plan, it must be considered within the context of timber production, wildlife conservation and visual aesthetics. The following figure was taken from the CFS Forest Carbon Accounting website (http://www.carbon.cfs.nrcan.gc.ca/cbm-cfs2_e.html) and illustrates the flow of carbon in a forest ecosystem.

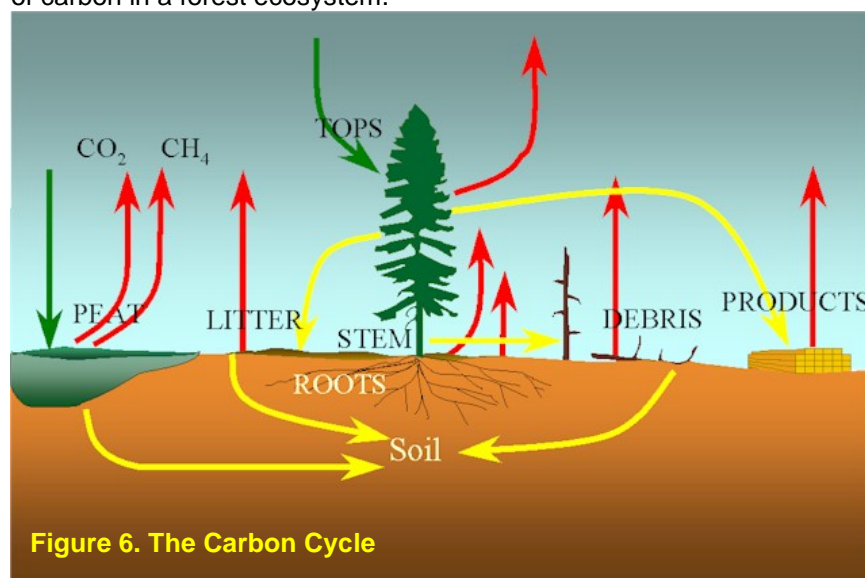


Figure 6. The Carbon Cycle

Carbon sequestration is defined as the net amount of carbon removed from the atmosphere and stored in the ecosystem each year. The calculation of average net carbon sequestration rates within a timber supply area allows for a long-term evaluation of the effects of management activities and/or natural disturbance on the rate at which the forested landscape is sequestering carbon. Average sequestration rates are based on the changes in ecosystem carbon storage over time without accounting for carbon removed in the harvested biomass. The rationale behind this is that the carbon in harvested timber will be stored in the wood

products following harvest. An assessment of the carbon sequestration rate provides a measure of the rate and the direction of carbon exchange between the forest ecosystem and the atmosphere.

Current Practices and Status of Indicator

Currently carbon uptake and storage is not monitored on the DFA. There are currently several forest level decision support tools available for assessing carbon sequestration rates. One such tool is the Canadian Forest Services Carbon Budget Model (CBM-CFS2) and another is the Forecast model developed by Kimmins (UBC). An overview of this model is presented on the CFS website at http://www.carbon.cfs.nrcan.gc.ca/cbm-cfs2_e.html. This model is a potential candidate for the TFL30 because it contains many of the fundamental requirements necessary to achieve SFM objectives identified through this measure.

While the targets have been set by the PAG, there is more work to do on the rationale for the Carbon Storage strategy. The indicator is to be reported when the timber supply analysis is conducted (generally, every five years or when other analysis opportunities allow for efficient reporting). Canfor and BCTS will report out current status on this indicator concurrent with Management Plan 10 Analysis.

Establishment of Target and Future Trends

As these plans have previously not been developed or implemented within the DFA, considerable research and development is required in order to produce baseline data for further develop Carbon storage targets and future trends. In order to develop a meaningful and useful plan, scientific and operational expertise will be an important part of plan development and will be conducted in conjunction of the analysis for Management Plan 10.

Forecasting and probable trends of the indicator

This measure differs from the majority of other measures in that it is targeted at developing targets the TFL30. Therefore, the method used to forecast this measure will also differ from the typical “what if scenario” utilized for other measures. An analysis of the “what if scenario” will identify why the stated target was chosen for this measure and how it contributes to SFM in the TFL30 DFA.

As with previous “what if scenarios”, it is useful to identify two potential scenarios:

- a) What if a Carbon storage target is developed and implemented considerably earlier than June 30, 2007?
- b) What if a Carbon storage target is developed and implemented considerably later than June 30, 2007?

The first scenario suggests that a Carbon storage target is developed and implemented considerably earlier than June 30, 2007. The most important point to make regarding this scenario is that it is realistically not achievable. As these plans have previously not been developed or implemented within the DFA, considerable research and development is required in order to produce baseline data for a preliminary Carbon storage target. In order to develop a meaningful and useful plan, scientific and operational expertise will be an important part of plan development and a certain timeframe is required in order to produce a valuable end product.

In contrast, the second scenario suggests an extension of the existing target to later than June 30, 2007. While this would ensure the inclusion of relevant scientific data and expertise, the timeline is not conducive to implementation of this SFM Plan and movement toward sustainability of the forest resource values identified by the PAG. While it is important to allow adequate time to develop useful strategies, it is also important to actively pursue these strategies in order to move forward with the SFM initiative.

The idea of a Carbon storage target to monitor forest ecosystem biomass and carbon pools was initiated to determine the capacity of forest ecosystems to sequester carbon, and the role that forests play in carbon storage and the reduction of global carbon dioxide emissions. Within the TFL30 DFA, future trends will likely show that this plan has been developed and implemented. The relationship between carbon pools and carbon monitoring is related to the forecasting initiatives planned for other measures and targets identified in this SFM Plan.

Monitoring and Reporting Procedures

More work is required on the rationale for our Carbon Storage strategy. Will report out current status concurrent with Management Plan 10 Analysis. Progress will be provided to the public advisory group through emails and meetings.

Responsibility and Continuous Improvement Opportunities

The strategic planning forester for Canfor and the Planning Forester for BC Timber Sales will be responsible for monitoring this indicator and reporting the progress and findings in the annual report.

3.31 Volume of Timber Harvested

| Statement of Indicator | Target and Variance |
|---|---|
| Cut control volume of timber harvested (m ³ /year) within the DFA. | Target: ≤100% Variance: +10% over each five year cut control period. |

This indicator addresses the following CSA-SFM parameters:

| |
|---|
| <p>1) CCFM Criterion: Multiple Benefits to Society CSA SFM Element: Timber and Non-Timber Benefits Value: Short and long term benefits. Objective: Maintain a flow of timber benefits.</p> |
|---|

Description of Indicator

To be considered sustainable, harvesting a renewable resource can not deteriorate the resource on an ecological, social, or economic basis. Undeniably, some resource values will be incompatible; however, the resource is considered sustainable where there is a balance between the various components of sustainability. In the determination of allowable annual cut (AAC) there are various considerations that are examined which include: the long term sustainable harvest of the timber resource, community stability, wildlife use, recreational use, the productivity of the defined forest area, etc. The AAC is determined every five years by the Chief Forester of the Province of British Columbia using a number of forecasts to assess the various resource values to be managed. The Chief Forester, on behalf of the crown then makes an independent determination of the rate of harvest that is considered sustainable. This harvest level must then be met within thresholds established by the crown (as depicted in the objective). By following the AAC determination the rate of harvest is consistent with what is considered to be sustainable ecologically, socially and economically, by an independent third party.

This indicator is a simple annual summary the volume of timber harvested from the DFA. These values are determined from timber scale billings which, is the same data used by the crown to determine stumpage revenue.

Current Practices and Status of Indicator

As stated above the Chief Forester makes a determination of the rate of harvest. The licensee then by law must achieve the AAC within specified thresholds as indicated in the objective. Each truckload of wood gets scaled at an approved MoFR scale site. The MoFR uses this information to apply a stumpage rate to the wood, and monitors the volume of wood harvested and compares this to the AAC thresholds.

The current status of Canfor volume cut is shown in the following table. BCTS has cut 214,510 m³ during the periods 2000-2004 and 0 m³ in 2005.

Table 14. Current Status of Canfor Current Allowable Annual Cut.

| Year | Actual Recorded Cut (m ³) | Allowable Annual Cut (m ³) | % Recorded Cut of AAC | 5 Year Cut Control % |
|------|---------------------------------------|--|-----------------------|----------------------|
| 2000 | 285,016 | 328,688 | 86.7% | 98.3% |
| 2001 | 165,183 | 328,688 | 50.3% | |
| 2002 | 375,231 | 328,688 | 114.2% | |
| 2003 | 342,475 | 180,000 | 190.3% | |
| 2004 | 155,848 | 180,000 | 86.6% | |
| 2005 | 41,506 | 180,000 | 23.1% | |

The primary timber demand is for coniferous sawlogs for use as dimensional lumber, with residual grades utilized for Kraft pulp. A small percentage of logs meeting peeler/veneer standards are used for plywood. The species profile from TFL 30 is predominantly a spruce/balsam mix with minor components of other coniferous species. To date, minor amounts of deciduous species have been utilized from TFL 30. Deciduous species are

not managed as a crop tree species but will remain as optional utilization. The majority of the mature deciduous species are either contained within large reserve areas, or retained as wildlife trees.

Establishment of Targets and Future Practices

A common method for establishing targets is to benchmark the current harvest levels and extrapolate to the next 5 to 10 years. However, due to the existing mountain pine beetle epidemic in the DFA, increased harvest levels make benchmarking difficult and unpredictable. The Chief Forester apportions AAC within the DFA and Canfor is committed to fulfil a 100% of their timber harvesting obligations.

Forecasting and Predicted Trends

As shown on the following figure using basecase 1b, forecasting the volume flow over time has indicated that the current AAC (201,213 m³) will be maintained for the short-term (about 5 years) and then stepping up by 64 % to 330,000 m³/year in the mid-term (10-60years) then increasing to 533,000 m³ in the long-term (beyond 60 years).

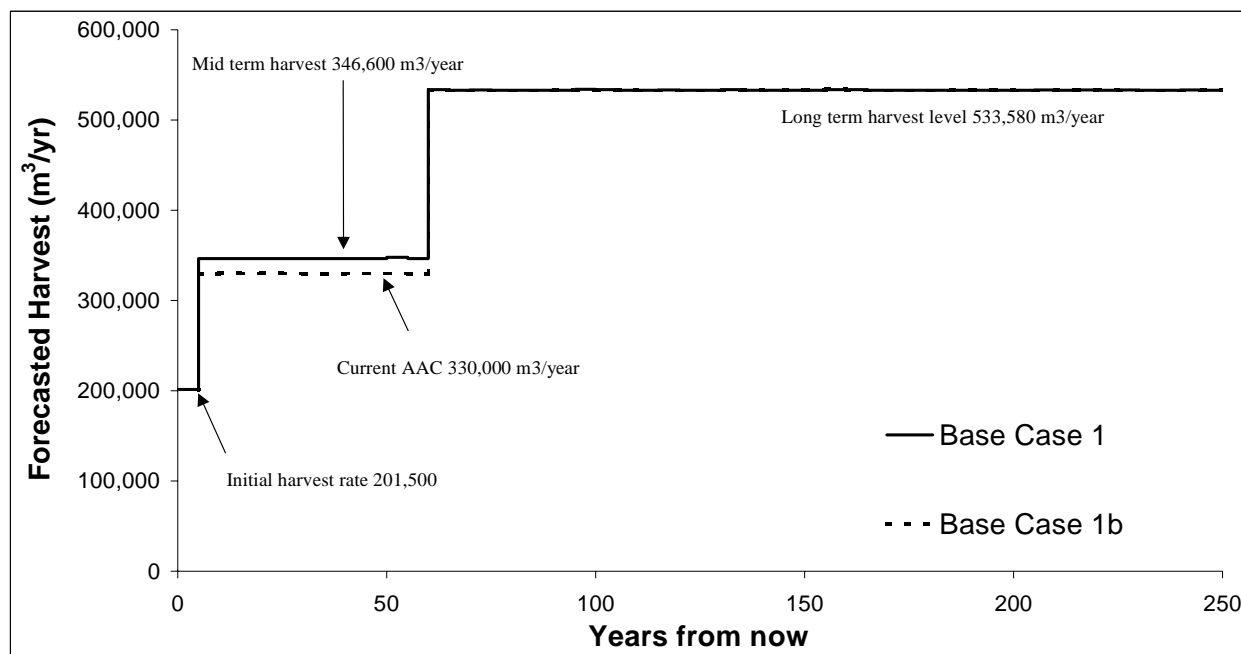


Figure 7. Forecasting Volume over Time – Scenario 1b.

The long-range forecast predicts that the AAC will be enhanced to as much as 533,000 m³/year within 70 years as future managed stands become fully available (based on the results of the indicator forecasting analysis in 2006). Another timber supply forecast would be conducted as part of the timber supply analysis for MP 10, which is due in mid 2008.

Monitoring and Reporting Procedures

The volume of timber actually harvested within the DFA will be determined annually by a review of MoFR timber scale billing summaries for the period of January 1st to December 31st each year, on an annual basis. BC Timber Sales will track the volume sold annually, and together with Canfor the cut level as a percentage of apportionment for the most recent 5-year cut control period will be reported in the annual SFMP report.

Responsibility and Continuous Improvement Opportunities

Planning foresters are responsible for ensuring that the volume planned for harvesting will meet the desired allowable cut volume apportioned across the TSA. Canfor and BC Timber Sales will work co-operatively with the Ministry of Forests and Range to better estimate the AAC and actual harvest level on an annual basis. As better estimates of the current damage from Mountain Pine Bark Beetle are obtained, more accurate AAC determinations will be possible.

3.32 Damaging Agent Assessment

| Indicator Statement | Target and Variance |
|--|---|
| Proportion of DFA (pre harvest and after free growing) assessed for damaging agents. | Target: 100% over 10 yrs Variance: -20%. |
| Proportion of the DFA (pre free growing) assessed for damaging agents. | Target: 100% over 7 yrs Variance: -10% |
| Non-recoverable volume loss due to stand damaging agents. | Target: $\leq 4,000\text{m}^3/\text{yr}$ but greater than $1,500\text{m}^3/\text{yr}$ |

These indicators addresses the following CSA-SFM parameters:

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|--|
| <p>1). CCFM Criterion: Multiple Benefits to Society CSA SFM Element: Timber and Non-Timber Benefits Value : Short and Long Term Benefits Objective: Maintaining a flow of timber benefits</p> |
|--|

Description of Indicators

Monitoring the health of the forest within the DFA play an important role in ensuring the continuous flow economic benefits are maintained. Assessment prior to harvesting and before free growing status is achieved will allow for adjustments to be made in the planning process and a greater understanding of the damaging agents which effect forest productivity.

Current Practices and Status of Indicators

These indicators are currently being developed. Pre free growing assessment should take place during the silviculture survey. Pre harvest and after free growing assessments will take place in conjunction with the site assessment process. In response to the Mountain Pine Beetle Epidemic, aerial overview flights are conducted each summer (after annual beetle flight) to identify and map infected areas across TFL 30. Ground surveys are performed in high-risk areas to gather more precise information to make treatment decisions.

Currently satellite images have been used to assess damaging agents in stands >80 years of age within the DFA. This would account for about 66% of the forest older than free growing age. Silviculture surveys over the last year have accounted for about 11% of the forest less than free growing age.

Non-recoverable volume loss on the DFA is estimated to be 3,640 m³ during the reporting period and comes from the assumptions used in Management Plan 9. Over the next several months, Canfor and BCTS will do further information gathering to recommend a target for non-recoverable loss to the public advisory group.

Establishment of Targets and Future Practices

The target for this indicator has been established at 100% to ensure that all areas are monitored for stand damaging agents within the DFA. The variance levels were established in view of this being a new indicator and will be reviewed to determine their appropriateness. The Mountain Pine Beetle epidemic is a priority at present and will remain for the short-term. Canfor and BC Timber Sales will continue conducting annual reviews of planning areas to identify areas with stand damaging agents and how this information will be integrated into the planning process.

Forecasting and Predicted Trends

It is anticipated that Canfor and BC Timber Sales will continue to meet the current target. However, it is important to identify what the accepted target means to SFM. By assessing the forest for damaging agents both as immature and mature stands forest managers are better able to reduce the spread of forest health agents, utilize timber before it deteriorates, and reforest areas with healthy young plantations. Use of a "what if scenario" is beneficial in helping to identify anticipated future trends for an indicator such as this. As the stated target for this measure is 100%, one other potential scenario will be analyzed:

- a) What if no damaging agent assessments were done?

Failure to assess forest stands for damaging agents would result in insufficient data available for planning foresters to make informed decisions. Lack of damaging agent assessments could result in economic losses as

forest health deteriorates and timber a volume loss as mature damaged timber is not salvaged. Damaging agents left unchecked could result in epidemics resulting in greater economic losses. Young forests unchecked of damaging agents may result in higher mortality or poor quality timber or failure to meet Free Growing dates. As these stands die and decay, they will release carbon dioxide into the atmosphere, thereby contributing to global climate change.

Other costs may come from failing to treat damaged stands. Allowing dead and diseased stands to persist on the landscape may result in more severe wildfires that destroy or damage property in the DFA. Thus, achieving the indicator's target may protect societal values in addition to providing ecological and economic benefits.

Monitoring and Reporting Procedures

Forest health overview mapping for TFL 30 is completed each summer. Ground surveys are to be completed on high priority stands in the fall/winter of each year. Pre free growing assessments should be tied to the silviculture survey. This data will be stored in the GENUS database.

Responsibility and Continuous Improvement Opportunities

The Planning Forester is responsible for co-ordinating the detection of damaged mature timber (after free growing) and the silviculture forester is responsible before free growing. The area team coordinator is responsible for reviewing and updating volume targets each year. Canfor and BC Timber Sales are also responsible for maintaining databases such as GENUS with current forest health conditions.

3.33 Accidental Industrial Fires

| <i>Statement of Indicator</i> | <i>Target and Variance</i> |
|--|---|
| Number of hectares (area) damaged by accidental forestry related industrial fires. | Target: < 10 ha per year Variance: +5 ha |

This indicator addresses the following CSA-SFM parameters:

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|--|
| <p>1) <i>CCFM Criterion:</i> Multiple Benefits to Society <i>CSA SFM Element:</i> Timber and Non-Timber Benefits <i>Value :</i> Short and Long Term Benefits <i>Objective:</i> Maintaining a flow of timber benefits.</p> |
|--|

Description of Indicator

This indicator measures the number of hectares lost to industrial forest fires. As fire can result in catastrophic losses to the timber supply, wildlife, and private property, a high value has been placed on reducing the impact of these fires in the DFA. Accidental industrial fires can be caused by various sources, including escapes from the use of prescribed fire (i.e. burning slash piles) or from human induced error (e.g. machinery, cigarette smoking, etc.). Industrial fires are usually brought under control quickly due to the availability of fire fighting equipment and Canfor's and BC Timber Sales' Fire Preparedness Plan. In contrast, naturally caused fires have the potential to quickly grow in size before fire control efforts can be undertaken. However the area and extent of accidental industrial fires must be minimized throughout the DFA in order to contribute to the overall health of the forest and long-term sustainability of the resource.

Current Practices and Status of Indicator

The main cause of accidental industrial related fires in the DFA is the burning of slash piles and operating industrial machinery. Canfor and BC Timber Sales take precautions to prevent accidental fire ignitions and to reduce the spread of fires once they start. These precautions include EMS checklists and inspections of on-site fire equipment, a Fire Preparedness Plan, and fire fighting training for some personnel.

This indicator applies to accidental industrial fires originating in the DFA.

Over the last year, there was 0 hectares damaged due to accidental forestry related industrial fires originating within Canfor and BCTS operations on the DFA.

Establishment of Target and Future Practices

Targets are established from a review of past performance within the DFA. While a target of 0 ha would be the ideal, the PAG set the current target due to the Mountain Pine Beetle epidemic and human error. Canfor and BC Timber Sales are committed to minimizing the area of accidental industrial fires and will continue efforts to prevent wildfire and control their spread through EMS procedures, training, and prompt initial attack strategies as part of the fire preparedness plan.

Forecasting and Predicted Trends

This indicator is not easy to quantifiably forecast as the ignition and spread of wildfires is dependent on many factors such as weather, slopes, and forest types. However, it is important to identify what the accepted target means to SFM. Accidental forestry related fires affect ecological, economic and social values of SFM. Therefore, the use of a “what if scenario” is beneficial in identifying anticipated future trends for an indicator such as this. As this indicator currently has the target set at less than 10 hectares, one other scenario should be identified:

- a) What if there were significantly more than 10 hectares of accidental forestry related fires throughout the DFA?

If there were more than 10 hectares of accidental forestry related fires throughout the DFA ecological values may benefit due to the historic nature of ecosystems in the DFA. However economic and social values could be negatively impacted. More significantly, loss of human life and property damage may occur. Timber supply, resource values and visual quality may also be compromised, thereby affecting overall economic benefits and social values from forests in the DFA. Failure to achieve the indicator target could also reduce quality of life values for the public within the DFA. For example, if an accidental forestry related fire destroyed a popular campsite, public recreation values could be reduced.

Negative influences from an increase in accidental forest industry related fires would likely outweigh the potential positive ecological gain. Therefore, Canfor and BC Timber Sales will continue to place high importance on minimizing the impact of accidental industrial fires. Based on historic information, accidental fires have often been less than 10 cumulative hectares across the DFA.

Monitoring and Reporting Procedures

The British Columbia Ministry of Forests and Range (MoFR) maintains a database of all fires that occur in the province, which includes their cause and their specific location. Canfor and BC Timber Sales (through the MoFR Protection Branch) may be involved in fire suppression activities for fires that occur within the DFA. Therefore, Canfor and BC Timber Sales will contact the MoFR annually in order to confirm the number of hectares reported as burned along with identification of the source of ignition. The number of hectares of accidental, industrial related fire damaged area will be reported in the annual SFM Plan report for the operating year April 1st to March 31st.

Responsibility and Continuous Improvement Opportunities

Canfor and BC Timber Sales will work co-operatively with MoFR Forest Protection Staff to better determine the causes and monitoring of accidental industrial caused fires

3.34 Non-Timber Benefits Requirements

| <u>Statement of Indicator</u> | <u>Target and Variance</u> |
|--|-----------------------------------|
| The percentage of forest operations consistent with the following non-timber benefits: visual quality, cultural heritage, and lakeshore management requirements in site plans. | Target: 100% Variance: 0% |

This indicator addresses the following CSA-SFM parameter:

- | |
|--|
| <p>1) CCFM Criterion: Multiple Benefits to Society CSA SFM Element: Timber and Non-Timber Benefits Value: Short and long term benefits Objective: Maintain a flow of non-timber benefits.</p> |
|--|

Description of Indicators

Forests can provide intangible benefits in addition to their economic and ecological values. Protection and maintenance of these values helps assure that these benefits will be available for current and future generations. Visual Quality Objective requirements address the perceived beauty of certain areas as designated by the MoFR District Manager or as contained in higher level plans. Lakeshore requirements address the valuable role waterfront plays in ecosystem diversity, recreation and aesthetics. A cultural heritage value is a unique or significant place or feature of social, cultural or spiritual importance. Maintenance of non-timber requirements is an important aspect to sustainable forest management because it contributes to respecting the social and cultural needs of people.

Tracking the success of meeting these requirements will allow Canfor and BC Timber Sales to evaluate their progress in conserving these values and the development of improved procedures as required.

Current Practices and Status of Indicator

Visually sensitive areas are defined as viewscapes that have been identified through a previous planning process. During Forest Stewardship Plan preparation, scenic areas are identified on a map and if harvesting operations are planned for an area that contains VQOs; information will be further identified in a Site Plan. Visual Impact Assessments (VIAs) are required on all areas with VQO to determine block shape, location and internal retention options. At the site level, strategies are included in the Site Plan to minimize visual impacts.

Depending on the size of the lake, the lakeshore may legally be defined as a riparian management zone and have an additional lakeshore management zone adjacent to it. This is known as a Lakeshore Management Area (LMA) and these designations establish specific management requirements, which are determined by ecological and social considerations. LMA are initially identified in the Forest Stewardship Plan. Once lakeshore requirements are identified in the site plan, there is a legal obligation for Canfor and BC Timber Sales to implement and adhere to those requirements.

Forest development plans have used an Archaeological Predictive Model to assess the potential presence of archaeological resources within proposed harvest areas or road access corridors. Where activities are proposed within zones of high archaeological potential, Canfor and BC Timber Sales conduct site level Archaeological Impact Assessments (AIAs) to identify, assess and record any archaeological resources that may be present. Management measures recommended by the archaeologist are incorporated into operational plans. Conservation strategies are implemented at the site level during harvesting operations so that all identified cultural heritage values will be conserved for future generations. Once a strategy to conserve cultural heritage values is included within a site plan, there is a legal obligation for Canfor and BC Timber Sales to implement and adhere to the strategy.

Each non-timber value undergoes harvest and subsequent silviculture inspections to ensure that these strategies are implemented as stated in the site plan.

Over the last year, 100% of Canfor and BCTS forest operations have been consistent with visual quality, cultural heritage, and lakeshore management requirements in site plans.

Establishment of Targets and Future Practices

The target of 100% was established for this indicator to reflect Canfor's and BC Timber Sales' commitment to meeting the legal and environmental goals prescribed in the site plans. Canfor and BC Timber Sales also recognizes the importance of these values to various stakeholders within the TFL30. The identification and conservation of non-timber benefits is a socially and ecologically important component of forest management. Therefore Canfor and BC Timber Sales will continue to ensure forest operations are consistent with the requirements as established in the site plans in order to achieve sustainable development that recognizes and conserves the values of visual quality, cultural heritage and lakeshores values.

Forecasting and Predicted Trends

It is anticipated that 100% of site plan requirements for this indicator will continue to be achieved. The exact level of success is not easily predicted as conditions vary from one site to another and circumstances, such as forest health and fire may arise that prevent the requirements from being achieved. However, it is important to identify what the accepted target means to SFM. Conservation of these non-timber values influences social, economic and ecological values within the DFA. Therefore, the use of a "what if scenario" is beneficial in identifying anticipated future trends for this indicator. As this indicator currently has a target set at 100%, one other scenario should be identified

a) What if only 50% consistency occurred between forest management operations and strategies outlined in the site plans with regard to visual quality, cultural heritage or lakeshore requirements?

Implementing only 50% of the site plan requirements for this indicator could have social, economic and environmental impacts. The overall timber supply would likely increase if these values were not conserved. However, visual quality and lakeshore requirements help businesses that cater to various forms of recreation. By not conserving these values businesses could lose customers dissatisfied with the state of the resource. It is safe to say a large segment of the population values the aesthetics of some landscapes and non-compliance with the site plan could negatively effect aesthetics. Also water quality, aquatic habitat and biodiversity could be compromised with 50% adherence to the lakeshore requirements. Implementing only 50% of the strategies to conserve cultural heritage values could lead to significant cultural loss to both First Nations and the general public within the DFA. Aboriginal communities may no longer become involved in development planning as potential infringement to unresolved treaty rights could occur if cultural heritage values are not fully conserved. Public confidence in the sustainable forest management process could be jeopardized if these values were not conserved.

The above "what if scenario" helps to identify some of the potential impacts of not achieving the stated targets for this indicator. Therefore, Canfor and BC Timber Sales will continue to ensure that 100% of forest operations are consistent with site plan requirements.

Monitoring and Reporting Procedures

The information that is required to monitor this indicator includes a summary of the number of forest management operations that are consistent with the site plan to conserve visual quality, cultural heritage and lakeshore values. Each of the non-timber values will be analyzed and reported separately. Canfor and BC Timber Sales will conduct pre-work meetings prior to the start of projects, monitoring inspections as the work is progressing and final inspections once the work is complete to ensure the commitments specified in the site plan are met. Each of these values will be monitored through EMS inspections and results will be recorded in the EMS database (GENUS).

Responsibility and Continuous Improvement Opportunities

Planning forest are responsible for ensuring visual quality, cultural heritage, riparian, and lakeshore evaluations are completed on areas for development. Harvesting supervisors are primarily responsible for ensuring site plan requirements are implemented in the field during harvesting operations. Silviculture foresters are responsible for ensuring silviculture activities are consistent with site plan requirements. If during implementation of the requirements problems occur actions will be taken to improve consistency. These actions may include greater supervision, additional inspections and additional training for equipment operators

3.35 Public Input Opportunity and Response to Public Concerns

| Statement of Indicator | Target and Variance |
|---|--|
| The number of opportunities given to the public and stakeholders to express forestry related concerns and be involved in our public planning processes. | Target: ≥ 3 types of media annually Variance: -1 |
| Percentage of Creating Opportunities (Canfor) and Keeping in Touch (BC Timber Sales) communication strategy requirements met. | Target: 100% Variance: -5% |

This indicator addresses the following CSA-SFM parameter:

| |
|--|
| <p>1) CCFM Criterion: Multiple Benefits to Society CSA SFM Element: Timber and Non-Timber Benefits Value: Short and Long term benefits Objective: Maintaining a flow of non-timber benefits</p> |
| <p>2) CCFM Criterion: Accepting Society's Responsibility for Sustainable Development CSA SFM Element : Public Participation Value: Public participation in decision making processes Objective: A clear process for wide public participation in SFM.</p> |

Description of Indicator

As public involvement is a key element of CSA-SFM, it is important to provide meaningful and effective opportunities to incorporate public input and respond to public concerns. Public values change over time making it is important to be able to efficiently solicit public feedback and where possible, incorporate this input into forest management and practices. Effective communication with the public builds collaborative working relationships and identifies issues in the early stages of the public planning process. Public plans include, forest stewardship plan, pest management plan, forest management plan, and the sustainable forest management plan.

Forestry activities can impact a wide section of the public and individual stakeholders within the DFA. This indicator was designed to monitor Canfor's and BC Timber Sales' success at providing effective opportunities to residents and stakeholders to express concerns and be proactively involved in the planning process. This involvement may include the identification of areas of interest, definitions of the nature of their interest in the land base, and any specific forestry activity that may impact their specific interests. This process ensures that when forestry activities are planned, information is exchanged in an effective and timely manner, so as to resolve potential conflicts before they occur. This process will help to identify the public values, interests and uses of the forest that will be considered within the TFL30 planning framework.

Canfor's "Creating Opportunities for Public Interest Process" management system is a communication framework. It achieves this by establishing goals that support good communication, by defining how the communications process will operate, who will be responsible, and by measuring system performance through the use of key performance indicators. This SFM indicator measures the success of meeting the communication strategy requirements as outlined in "Creating Opportunities for Public Interest".

"Keeping in Touch" (KIT) tracks communications between BC Timber Sales and all interested parties that they notify when forestry operations/ developments are to occur. These interested parties include private landowners, lodge operators, trappers, or hunting guides. Strategies have been designed to ensure that information is communicated to these individuals in a timely and efficient manner. This communication considers non-timber users and inhabitants of the DFA and realizes that forestry operations can disrupt lives and businesses. BC Timber Sales is currently in the process of enhancing its communications strategy and exploring possibilities of incorporating it into its existing woodlands information management system, Genus.

Current Practices and Status of Indicator

The following key performance indicators apply to this measure and will be applied to communication strategies:

- 100% of communications from resource user will be responded to within 30 days
- 100% of commitments made to resource users are delivered within the time frame specified

- 100% of the applicable public is sent notification of planning and development activities associated with TFL30 forest management activities.

Canfor and BCTS have used a total of 4 media types to provide public and stakeholders opportunities to express forestry related concerns and be involved in our planning processes. These include newspaper ads, notification letters, public meetings, and face-to-face meeting.

Over the last year, 100% of public commitments were met on the DFA.

Establishment of Targets and Future Practices

The indicator's target of 100% demonstrates Canfor's and BC Timber Sales' commitment to the public input aspect of the SFM process. A 5% variance was established, as there are often factors that delay a response. Information may be unavailable that is required for the response, or personnel who may be able to provide input for a response may not be present. Public input is an important aspect of the SFM process. Therefore, it is paramount to ensure that written and documented concerns are dealt with in a timely and thorough fashion. If the target is not met in the future, strategies will be developed to improve practices, or targets will be adjusted to better reflect practices within the DFA.

Forecasting and Predicted Trends

It is the intent of Canfor and BC Timber Sales to meet the target, and it is anticipated this goal will be met. The exact level of success is not easy to quantifiably forecast as it relies on unpredictable factors such as human error. However, it is important to identify what the accepted target means to SFM. The response to concerns and requests directly affects social values and indirectly affects economic values of SFM. Therefore, the use of a "what if scenario" is beneficial in identifying anticipated future trends for an indicator such as this. As this indicator has a stated target of 100%, one other potential scenario should be developed:

- a) What if there were only 50% of Communication Strategy Requirements were met?

If there were only 50% of communication strategy requirements were met; adequate attention would not be made to valuable public input. Public input into the SFM process is required to adequately consider other resource values within the DFA. If only 50% of concerns were addressed, public participation into SFM could decrease and negative impacts to other resource values such as cultural heritage, non-timber forest resources and biological richness could potentially occur. If these other forest values are not fully realized, economic values could also potentially decrease. For example, a lodge owner may make a written enquiry to learn when hauling is occurring so he knows when to book guests. If he does not receive a response, he may lose his guests and suffer the economic consequences.

The above "what if scenario" analysis implies that a balance of values can be achieved through achievement of the established target. Therefore, Canfor will continue to comply with the communication requirements as outlined in 'Creating Opportunities for Public Interest' (Management System # 6, Canfor).

The number of opportunities given to the public and stakeholders to express forestry related concerns and be involved in the planning process directly affects social values and indirectly affects economic values of SFM. Therefore, the use of a "what if scenario" is beneficial in identifying anticipated future trends for an indicator such as this. As this indicator has a stated target of at least 3 opportunities, one other potential scenario should be developed:

- a) What if no opportunities were given to the public or stakeholders to express forestry related concerns and be actively involved in the planning process?

If there were no opportunities given to the public to express forestry related concerns, adequate attention may not be given to valuable public input. Public input into the development planning process is required to adequately consider other resource values within the DFA. If no opportunities were given, public participation into forest development planning may decrease and impacts to other resource values such as cultural heritage, non-timber forest resources and biological richness could potentially occur. The oversight of forest planners may impact other resource users in a way that may have been accommodated if the planners had known of the multiple use. For example, the timing of forest operations may impact recreational users. If it was possible, and not done, the timing of those operations may negatively impact the value derived by recreational users.

The general public may grow disillusioned with an industry that does not adequately seek their input and may eventually not support the forest industry financially or politically. Sustainable forestry relies on the support of an informed public that believes its opinion matters on how Crown forests are to be managed.

Under the Forest and Range Practices Act, more emphasis will be placed on strategic level public input and related planning. This may result in fewer formal opportunities for site-specific public input. However, it is anticipated that Canfor and BC Timber Sales will continue to seek out public involvement in operational planning within the DFA. Initial benchmarking data will help to indicate how the future trend of this indicator is likely to proceed.

Monitoring and Reporting Procedures

The RACI Process for each aspect of communication is outlined in the "Creating Opportunities for Public Interest" document. All communications will be documented within Canfor's and BC Timber Sales' databases, which will enable tracking of all communication and responses. A summary of the percentage compliance to the communication strategies will be reported on an annual basis for the operating period of April 1 to March 31.

Responsibility and Continuous Improvement Opportunities

Canfor and BC Timber Sales are responsible for monitoring, tracking and reporting this indicator. While the personnel actively responsible for doing this will vary, they must all ensure the type and number of opportunities will be tracked. Continual improvement will be focused on evaluating the effectiveness of the input at the planning level vs. the operational practices within public plans, which lead to participation and continual improvement.

3.36 Viewing of Access Plans

| Indicator Statement | Target and Variance |
|---|---|
| Annual public review of Canfor and BC Timber Sales TFL30 road access plans. | Target: On or before October 1 st of each year Variance: +1 month |

This indicator addresses the following CSA-SFM parameter:

- | |
|--|
| <p>1) CCFM Criterion: Multiple Benefits to Society CSA SFM Element: Timber and Non-Timber Benefits Value: Short and Long Term Benefits Objective: Maintaining a flow of non-timber benefits</p> |
|--|

Description of Indicator

Forestry roads provide access for industry and the public to large portions of the DFA. Creating, maintaining, deactivating, and closing these roads is an ongoing process that requires careful planning. Because many non-forestry users of these roads have an interest in their management therefore, it is important to provide opportunities for viewing of Canfor and BC Timber Sales current access plans. The input received from such viewings can be used to plan future access management activities.

Sustainable forest management includes non-industrial uses of the forest and access to the forest can influence ecological, economic and social values. For example, constructing a road may provide the public with access to new lakes for fishing, but it may also open areas to hunting and poaching pressure. Closing a road may protect wildlife values in an area, but a local lodge may rely on that road for recreational access. By providing a viewing of access plans and receiving input, Canfor and BC Timber Sales will be able to manage forest roads for the broadest spectrum of interests.

Current Practices and Status of Indicator

Currently, Canfor and BC Timber Sales provide the public with opportunities to review their cutblock and road access information through the forest development planning process. Many public and stakeholder interests contact Canfor and BC Timber Sales for harvest schedules and road access information for the winter. These information requests are particularly common in the late fall, most likely for hunting purposes.

Establishment of Targets and Future Practices

The target of providing an annual viewing of current access plans by October 1st was established to reflect Canfor's and BC Timber Sales' commitment to receiving input on access management. A one-month variance was established to reflect the possibility that completing access plans may run into unforeseen complications.

Canfor and BCTS participated with other licensees in the Prince George Forest District on October 24, 2005 to road access plans for the winter. An ad was placed in the local newspaper and attendance was low by the public.

Forecasting and Predicted Trends

This indicator cannot be quantifiably modelled as the target deadline is either achieved or it isn't. However, a "what if scenario" can be used to illustrate the value of the chosen target in relationship to SFM. As this indicator identifies the target as providing a viewing of Canfor's and BC Timber Sales' current access plans of the DFA, only one other scenario applies for the "what if scenario" analysis:

- a) What if there isn't a viewing provided of Canfor's and BC Timber Sales' current access plans of the DFA?

Providing viewing opportunities of access plans encourages public input into the planning process. If Canfor and BC Timber Sales did not provide this opportunity, the views of the public would not be properly incorporated into forest management planning within the DFA. Access management is implemented in order to control public and industrial access to help conserve other forest resource values, including wildlife habitat, guiding and trapping, hunting, and recreation opportunities. Failure to consider the impacts of access management on these values could result in economic harm to non-forestry industries. In addition to economic impacts, social values derived from recreation could be harmed if access plans do not consider their needs.

Canfor and BC Timber Sales are committed to providing a viewing of current access plans by October 1st of each year. Comments will be considered when future access management activities are planned.

Monitoring and Reporting Procedures

Canfor and BC Timber Sales will be responsible for opportunities for the viewing of public access plans on or before October 1st. The success in achieving this indicator will be reported in the annual SFMP report for the operating year of April 1st to March 31st.

Responsibility and Continuous Improvement Opportunities

As stated, Canfor and BC Timber Sales are responsible for the monitoring, tracking, and reporting of this indicator. If a viewing is not provided by the deadline, or within the variance period, Canfor and BC Timber Sales will review their access planning procedures and determine ways to meet the target date

3.37 Survey of Non-Timber Uses and List of Quality & Value of Non-timber Forest Products

| Statement of Indicator | Target and Variance |
|--|---|
| Public survey of non timber uses within the DFA | Target: at least every 4 years Variance: +1 year |
| A list of quality and value of non-timber forest products from the DFA | Target: March 31, 2007 Variance: + 3 months |

This indicator addresses the following CSA-SFM parameters

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|---|
| <p>1) CCFM Criterion: Multiple Benefits to Society CSA SFM Element: Timber and Non-Timber Benefits Value: Short and long term benefits. Objective: Maintain a flow of non-timber benefits.</p> |
| <p>2) CCFM Criterion: Multiple Benefits to Society CSA SFM Element: Fair Distribution of Benefits and Costs Value: Fair Distribution of Benefits and Costs Objective: Maintain the distribution of benefits and costs.</p> |

Description of Indicator

As sustainable forest management pertains to the interaction of social, ecological and economic factors, forest managers must not only be cognisant of the range of different uses on the DFA, but also how these uses/values change throughout time. Since forest management activities can have both positive and negative effects on other uses, it is important to be able to recognize the wide range of uses/values for consideration in sustainable forest management planning.

This indicator measures the number of different local uses/values within the DFA as well as the intensity for each value/use. As data is collected through the public surveys possible changes can be evaluated.

Current Practices and Status of Indicator

A commercial and non-commercial use survey was undertaken with the results being mapped. There is a greater variability of non-commercial use than commercial uses. Popular non-commercial uses include camping, hiking, hunting, fishing, snowmobiling, berry picking, skiing and others. Commercial use includes trapping, guiding and forestry.

On October 2003 the PAG meeting led to recommendations that diversity index survey methodology be revisited. A PAG working group developed new methodology, which was presented to the PAG members during the June 2004 meeting. A contract was established with UNBC in March 2006 to survey users of the TFL30 for recalculation the diversity index. It is believed that several more samples will be included in this survey approach and will provide a better representation of the diversity of forest users. Results will be available for the 2006/07 annual report.

Establishment of Targets and Future Practices

Targets were established to represent Canfor and BC Timber Sales commitment to sustainable forest operations that maintain non-timber values. A commercial/non-commercial diversity index enables Canfor and BC Timber Sales to evaluate the changes in diversity of uses/values over time.

Forecasting and Predicted Trends

It is expected that Canfor and BC Timber Sales will undergo regular non-timber benefit surveys as outlined in this measure. It is worthwhile to use a "what if scenario" in order to better consider the importance of this indicator. As the indicator currently has a target of conducting a survey at least every 4 years, one other scenario should be considered:

- a) What would happen if the survey of local uses/values placed on the forest were never taken?

Values/uses that are not identified through a regular survey may be overlooked and negatively affected by forest management activities if a uses/values survey were not done. This negative impact could have social, economic

and/or ecological ramifications. The public may lose confidence in the SFM process and feel their concerns are not being addressed. Without regular input from the public about non-timber benefits it would be difficult to ensure Canfor and BC Timber Sales are adapting to the changing values/uses the public places on the forest within the DFA.

The above scenario helps to identify some of the potential impacts of not achieving the stated target for this measure. Therefore, Canfor and BC Timber Sales will continue to survey the public on the non-timber benefits within the DFA in accordance with the target.

Monitoring and Reporting Procedures

Data to calculate this measure will be gathered through a public survey on a regular basis. In June of 2005 UNBC was contracted to conduct the survey for TFL30. The results of the survey are to be available for the annual report.

Responsibility and Continuous Improvement Opportunities

The Planning Forester will be responsible for ensuring a commercial/non-commercial uses survey for TFL30 is undertaken on a regular basis according to the established target. Canfor's and BC Timber Sales' commitment to continuous improvement is evident in the adjustments, which have been made to the survey method to date. The results of the new methodology will be reassessed to ensure that they represent the intent of the measure.

3.38 Local Contract Value

| Statement of Indicator | Target and Variance |
|---|------------------------------|
| Percentage of money spent on forest operations and management in the DFA provided from the North Central Interior Suppliers\Contractors – applies to Canfor only. | Target: ≥90% Variance: 0% |

This indicator addresses the following CSA-SFM parameter:

| |
|---|
| <p>1) CCFM Criterion: Multiple Benefits to Society CSA SFM Element: Community and Sustainability Value: Community well being. Objective: Support opportunities for maintaining a resilient and stable community.</p> |
|---|

Description of Indicator

Forests provide many ecological benefits but they also provide substantial socio-economic benefits. In order to have sustainable socio-economic conditions for local communities associated with the DFA, local forest-related businesses should be able to benefit from the work that is required in the management of the DFA.

Furthermore, for small forestry companies to contribute to and invest in the local economy there must be assurances that there will be a consistent flow of work. In the same way that larger licensees depend on a secure flow of resources to justify investment in an area, small businesses depend on a sustained flow of opportunities to develop and invest in the local community.

Local North Central Interior BC (NCI) contracts are considered to be those of which the contractor is located in the geographic area bounded by 100 Mile House in the south, Fort St. John in the north, Valemount in the east and Terrace in the west. . The total dollar value of goods and services considered to be local will be calculated relative to the total dollar value of all goods and services used. This calculation will be used to derive the percentage of money spent on forest operations and management of the DFA from suppliers in NCI BC.

Current Practices and Status of Indicator

A query of the financial data stored within Canfor's accounting system allows for an indication of the current status of this indicator and serves as a methodology to track monies spent within the DFA to benefit the North Central Interior.

Table 15. Current Status of Contract Value within the North Central Interior.

| Current Status of Indicator * | Year | Target | Achieve By: |
|--------------------------------------|-------------|---------------|--------------------|
| 92.4% | 2000 | >90% | Annually |
| 93.0% | 2001 | >90% | Annually |
| 95.2% | 2002 | >90% | Annually |
| 99.1% | 2003 | >90% | Annually |
| 98.6% | 2004 | >90% | Annually |
| 99.4% | 2005 | >90% | Annually |

*Current status is based on a calendar year Jan.1 to Dec. 31.

Establishment of Targets and Future Practices

The target was based on Canfor's past performance and reflects their commitment to supporting North Central Interior businesses.

Forecasting and Predicted Trends

This indicator is not easy to quantifiably forecast through the modelling process over a defined time frame. However, it is important to identify what the accepted target means to SFM. The use of a “what if scenario” can be beneficial in identifying anticipated future trends for an indicator such as this. The percentage of money spent on forest operations and management within the DFA provided from the North Central Interior suppliers is an important aspect of SFM because it directly relates to sustainability of the local economy. As the target for this indicator is a value greater than or equal to 90%, one other scenario should be analyzed:

- a) What if none of the money spent in the DFA for forest operations and management was attributable to North Central Interior suppliers and contractors?

If the amount of money spent on forest operations and management on the DFA provided from the North Central Interior suppliers was 0%, two important values could be at risk. The first, and most important of these, would be a reduction in the overall economy of the North Central Interior. Utilizing services from outside of the North Central Interior reduces the overall economy and affects local people and businesses. Forest managers sometimes must look to sources outside of the North Central Interior if the goods or services they require are not available in this region. Otherwise, money spent outside the North Central Interior simply reduces the overall economy of the region.

The second risk to supporting business from outside of the North Central Interior is the lack of local knowledge and expertise that could be delivered. Businesses that are located in the North Central Interior generally conduct most of their activities in this region and therefore have a better understanding of the area and its ecology. By utilizing North Central Interior suppliers, the public and employees of the forest industry are likely to receive more valuable services based on locally applied knowledge and expertise.

Due to the identified potential impacts this indicator could have on the economy and stability of communities in the north central interior, Canfor is committed to achieving the stated target for this indicator.

Monitoring and Reporting Procedures

This indicator will be monitored and reported through Canfor's accounting system. Canfor will conduct a financial query of expenditures by postal code for suppliers and contractors within the North Central Interior compared to the total dollars spent. The indicator percentage will be included in the annual SFMP report for the operating year of April 1st to March 31st.

Responsibility and Continuous Improvement Opportunities

Canfor is responsible for the monitoring, tracking and reporting of this indicator. Specifically, accounting departments are responsible for querying the information needed to determine the percentage. The results will be monitored to ensure the target is achieved and if non-compliance occurs tendering processes will be assessed with possible plans of action developed.

3.39 Supply of Timber to Local Processing Facilities

| Statement of Indicator | Target and Variance |
|--|--------------------------------|
| Proportion of timber extracted from the DFA supplied to local processing facilities. – applies to Canfor only. | Target: ≥ 95% Variance: -5% |

This indicator addresses the following CSA-SFM parameters:

| |
|---|
| <p>1) CCFM Criterion: Multiple Benefits to Society CSA SFM Element: Community and Sustainability Value: Community well being. Objective: Support opportunities for maintaining a resilient and stable community.</p> |
|---|

Description of Indicator

Sustainable forest management involves the balancing of ecological, social and economic values. The social and economic well being of forest-dependent communities is contingent upon a healthy and productive forest ecosystem. These resources provide the sustained flow of social and economic benefits to these communities. Canfor, through its sustainable forest management of the DFA, is committed to ensuring the sustainability of the forest ecosystem. Canfor can also play a key role in the stability and sustainability of socio-economic factors within the area by ensuring that a large proportion of the volume is processed by facilities located in the area.

This indicator provides information regarding the volume (m³) harvest from the DFA which goes to timber processing facilities located within the boundaries of the Prince George Timber Supply Area (TSA), compared to the total volume of wood harvested from the DFA.

Current Practices and Status of Indicator

Each truckload of wood is scaled at an approved Ministry of Forest and Range scale sites. When the truckload is weighed at the mill's scale and the timber mark is recorded into Canfor's GENUS database system, Logs Production Module (LOGSPROD). Querying LOGSPROD for June 2005 to March 2006 indicates that 100% of the timber harvested was delivered to local Prince George TSA facilities.

Table 16 Percentage of Timber Supplied to Local Facilities

| Year | Percentage Volume (m3) Timber |
|-------------|--------------------------------------|
| 2000 | 100 |
| 2001 | 98.4 |
| 2002 | 99.8 |
| 2003 | 99.8 |
| 2004 | 99.6 |
| 2005 | 100.0 |

Establishment of Targets and Future Practices

The target of 95% demonstrates Canfor's commitment to supporting opportunities for maintaining resilient and stable local economies.

Forecasting and Predicted Trends

This indicator is forecast to continue to be 95% or greater of the timber harvested by processed by local Prince George TSA facilities.

Monitoring and Reporting Procedures

This indicator will be monitored through Canfor's GENUS systems-Logs Production Module (LOGSPROD) annually. The Planning Forester is responsible for compiling and presenting the results of this tracking in the annual SFMP report.

Responsibility and Continuous Improvement Opportunities

The Planning Forester will be responsible for tracking this measure through the LOGSPROD system. On an annual basis this measure is to be reviewed. Canfor recognizes the vital role the forest plays in the stability of local economies and is committed to maintaining or exceeding the target.

3.40 Main Access Road Maintained

| Indicator Statement | Target and Variance |
|---|---|
| Km's of main access roads maintained to a minimum standard in the spring. | Target: \geq 200 km Variance: -10% |

This indicator addresses the following CSA-SFM parameters:

- 1) **CCFM Criterion:** Multiple Benefits to Society
CSA SFM Element: Community and Sustainability
Value: Community well being.
Objective: Support opportunities for maintaining a resilient and stable community.

Description of Indicator

Roads are a necessary component of forest management as they allow access to the forest resource and its recreational potential. The presence of roads can also affect the environment through alteration of hydrological functions, the potential for erosion and mass wasting, and roads can also adversely affect wildlife populations. Roads need to be carefully planned and access needs to be closely monitored in order to achieve economic efficiency and to mitigate any detrimental effects that may occur.

This measure is a general indicator of the amount of roads that are maintained within the DFA annually to allow the public access benefits to the forest resource. A balance must be met between the value of access to the forest resource, the social costs or benefits, and the ecological costs or benefits in terms of impacts to other resource values such as wildlife. Sustainable forest management pertains to the interaction of ecological, economic and social factors. Therefore, forest managers must be aware that a range of different values and benefits can be derived from the management of forest road access.

Current Practices and Status of Indicator

Road maintenance programs are currently tracked through each Licensee Team member's internal data records. The number of roads currently being maintained in the DFA can be identified through these systems. The current status of this measure is 200 km, of which 8.6 km is maintained by BCTS and the remaining amount by Canfor. The main roads within the DFA include: North Fraser Forest Service Road (FSR), Church FSR, Pass Lake FSR, Seeback FSR, Herrick FSR, Olsson road, Otter road, Hyden road, and Bend road,

Establishment of Targets and Future Practices

Targets are established from a review of past and expected future performance within the DFA. The target reflects the commitment of Canfor and BCTS to ensure a certain amount of roads are maintained in the spring.

Forecasting and Predicted Trends

This measure is not easy to quantifiably forecast over a defined time frame because it is operational in nature. However, it is important to identify what the accepted target means to SFM. Maintenance of forest roads for public use contributes to recreation values, quality of life values and economic values derived from other uses of the forest resource in the DFA. Therefore, the use of a "what if scenario" is beneficial in identifying anticipated future trends for a measure such as this. When forecasting a variable in this manner, it is useful to identify two potential scenarios:

- a) What if only 50% (100km) of the main access roads were maintained for public use?

If only 50% of the main access roads were maintained for public use, it is anticipated that recreation opportunities would potentially decrease, certain quality of life values may decline, and economic and social values from non-timber resources may decrease due to limited public access to the forests within the DFA.

This "what if scenario" analysis implies that a balance of values can be achieved through sustaining a level of main access roads maintained for public use. Although this level has not yet been fully identified through past experience, the Licensee Team is committed to achieving the identified target and adaptively managing forest practices to achieve sustainability.

Monitoring and Reporting Procedures

Each year, Canfor and BCTS review a portion of its roads under their responsibility either by flights or by driving each identified road to ensure good working conditions. These are not formal inspections but specific information regarding maintenance or mitigation works is recorded annually during these checks. Mitigation or maintenance issues that are identified are scheduled for subsequent activities. The indicator percent will be reported in the annual SFM Plan report for the operating year of April 1st to March 31st.

Responsibility and Continuous Improvement Opportunities

Canfor and BC Timber Sales are responsible for the monitoring, tracking and reporting of this indicator. Specifically, harvesting supervisors are responsible for determining the roads to review and maintain each year. Canfor and BC Timber Sales will explore the effectiveness of this indicator in determining whether the public continues to receive benefits from the forest industry.

3.41 Stumpage Paid to Government

| Indicator Statement | Target and Variance |
|---|------------------------------|
| The percent of stumpage paid on time to Government – applies to Canfor only | Target: 100% Variance: 0% |

This indicator addresses the following CSA-SFM parameter:

- | |
|---|
| <p>1) CCFM Criterion: Multiple Benefits to Society CSA SFM Element: Fair Distribution of Benefits and Costs Value: Fair Distribution of Benefits and Costs Objective: Maintain the distribution of benefits and costs.</p> |
|---|

Description of Indicator

The payment of stumpage owing on the timber harvested by Canfor is a quantifiable indicator of how the public in the DFA is receiving a portion of the economic benefits derived from forests. It is important to note that Canfor does not control how stumpage royalties are spent across the province, or whether the public receives benefits from stumpage or not. However, it should be assumed that a portion of the royalties received from stumpage would be returned to communities within the DFA.

Forests provide many ecological benefits to areas that surround them and also generate significant socio-economic benefits. In order to ensure continual sustainable socio-economic conditions for local DFA communities, all stumpage billings will be paid on time.

BC Timber Sales contributes to socio-economic benefits to the public by way of revenues that are generated through its auctioning of timber. Relative to this indicator, BC Timber Sales will report out annually on the amount harvested and its related revenues.

Current Practices and Status of Indicator

Each month, the provincial government invoices Canfor for stumpage. This invoice is directed to the accounting and payroll departments for immediate processing.

BC Timber Sales does not pay stumpage directly; however, the organisation does generate revenue through stumpage paid by Timber Sale License (TSL) holders who have acquired the right to harvest timber awarded by BC Timber Sales. TSL holders pay stumpage to the crown based on a competitive bid process associated with the auctioning of timber.

This indicator only applies to Canfor.

Currently Canfor have paid 100% of its stumpage to Government on time.

Establishment of Targets and Future Practices

Targets are established from a review of past and expected future performance within the DFA. The target reflects the commitment of Canfor to ensure all stumpage payments are made on time to the government. The target also reflects the commitment of BC Timber Sales to report out on volume harvested and revenue generated.

Forecasting and Predicted Trends

While Canfor intends to pay 100% of stumpage on time to government, the exact level of consistency with this target is difficult to forecast. However, it is important to identify what the accepted target means to SFM. The use of a "what if scenario" can be beneficial in identifying anticipated future trends for an indicator such as this. The percent of stumpage paid annually on time is an important aspect of SFM because it indirectly relates to sustaining the local economy, and therefore certain aspects of "quality of life" for the public. As the target for this indicator is 100%, one other scenario should be analyzed:

- a) What if only 50% of stumpage were paid annually on time?

If only 50% of stumpage was paid annually on time, the overall economy of the DFA could potentially be at risk. Stumpage is a payment made to the Crown by forest Licensees based on the volume of timber harvested from

Crown land. Stumpage payments are revenue for the government and this money eventually feeds back into the local economy through various government services, programs or funding opportunities. Various levels of government also finance programs and projects that improve the social conditions of the DFA. A decline in revenue may threaten these activities, possibly leading to a decline in a community's quality of life.

While Canfor has no control of how stumpage fees are spent once they are delivered to the government, payment of stumpage fees ensures that the public is ultimately receiving a portion of the economic benefits that are derived from the forest resource. Due to the impact this indicator could have on the local economy and quality of life, Canfor is committed to pay 100% of annual stumpage payments on time.

Monitoring and Reporting Procedures

The stumpage payment information that will be monitored is available through Canfor's accounting system and future tracking of this indicator will be completed through a yearly analysis of accounting records. The indicator percent will be reported in the annual SFMP report for the operating year of April 1st to March 31st.

Responsibility and Continuous Improvement Opportunities

Canfor and BC Timber Sales are responsible for the monitoring, tracking and reporting of this indicator. Specifically, financial/ accounting personnel are responsible for determining the percentage of stumpage paid on time. Canfor and BC Timber Sales will explore the effectiveness of this indicator in determining whether the public continues to receive economic benefits from the forest industry.

3.42 Average Income of DFA workers

| Indicator Statement | Target and Variance |
|---|--|
| Average income of DFA forestry sector workers compared to provincial average for forestry sector workers. | Target: $\geq 100\%$ every 5 years Variance: 0% |

This indicator addresses the following CSA-SFM parameter:

- | |
|--|
| <p>1) CCFM Criterion: Multiple Benefits to Society CSA SFM Element: Fair Distribution of Benefits and Costs Value: Fair Distribution of Benefits and Costs Objective: Maintain the distribution of benefits and costs</p> |
|--|

Description of Indicator

Forests provide a mix of benefits to society, including direct & indirect employment, wood products, good & services, non-market values, tourism, guiding, trapping, recreation, and many others. This indicator focuses on the economic and social benefits to society in the local community that are offered by the forest sector in the form of income. The direct employment and income is a part measure of fair distribution of costs within the local area.

Current Practices and Status of Indicator

The forest sector generally provides a fair and reasonable wage for work done in the area. Usually the forest sector benchmarks its wages against others and develops their own range based on specific company goals such as being competitive in the market place. Based on a review of the Prince George Timber Supply Review 2001 report, the average income of a forest sector worker in Prince George is \$46,690. The provincial average income of a forestry and logging sector worker from 2001 StatsCan census is estimated at \$42,925. The difference in average Prince George area income compared to Provincial average income is 108.7%. The next census is in 2006 and will likely be available some in the 2007-08 reporting year.

Establishment of Targets and Future Practices

Targets were established from a desire by the PAG to be at least at the provincial average regarding income.

Forecasting and Predicted Trends

This measure is not easy to quantifiably forecast through the modeling process over a defined time frame. However, it is important to identify what the accepted target means to SFM. The use of a "what if scenario" can be beneficial in identifying anticipated future trends for a measure such as this. The average income of forest sector workers in the DFA is an important aspect of SFM because it directly relates to providing benefits to the local economy, and therefore certain aspects of quality of life for the public. As the target for this measure is stated as $\geq 100\%$, one other scenario should be analysed:

- a) What if the average income of DFA forestry sector workers compared to provincial average for forestry sector workers was considerably less than 100%?

If the average income of DFA forestry sector workers was considerable less compared to provincial average for forestry sector workers, then the workforce would probably migrate from the area and therefore the overall economy of the DFA and quality of life for the public would potentially decrease over time.

Fair and reasonable wages help boost the economy because they provide a direct economic benefit to the public. Social values such as quality of life are also tied to fair distribution of benefits.

Monitoring and Reporting Procedures

Average income data will be tracked and reported by Canfor strategic planning forester from queries of BC stats, local community data, and other sources. The indicator percent will be reported in the annual SFM Plan report for the calendar year January 1st to December 31st every five years.

Responsibility and Continuous Improvement Opportunities

The strategic planning forester with Canfor is responsible for the monitoring, tracking and reporting of this indicator. Canfor and BC Timber Sales will explore the effectiveness of locating more local data for reporting on this indicator.

3.43 Donation to the Local Community

| Indicator Statement | Target and Variance |
|---|----------------------------------|
| Number of donations to the local community – applies to Canfor only | Target: ≥ 6 Variance: 0% |

This indicator addresses the following CSA-SFM parameter:

- | |
|--|
| <p>1) CCFM Criterion: Multiple Benefits to Society CSA SFM Element: Fair Distribution of Benefits and Costs Value: Fair Distribution of Benefits and Costs Objective: Maintain the distribution of benefits and costs</p> |
|--|

Description of Indicator

This measure indicates how Canfor provides economic and social benefits to the public over and above wages, taxes and stumpage fees through donations and involvement in local community organizations. Types of support opportunities within the local community vary from providing personnel, equipment and/or facilities, to providing cash and product donations. This measure is an important component of a community's economic and social stability, but it is also difficult to quantify as support opportunities often go unrecorded.

Support opportunities help to increase awareness of sustainable forest management and its role within the DFA. This can indirectly lead to building a strong community and creating a viable labour force.

Current Practices and Status of Indicator

This indicator applies to Canfor only.

During 2005, Canfor provided several donations within the community and included such items as:

- United Way Campaign
- Rivers Day
- Scholarships (District 57, CNC)
- Doug Little Symposium Sponsor
- Spirit of the North
- PG Community foundation
- COFI – forestry education modules for schools
- Various sports event (PG minor hockey, iceman, labour classic run,
- Forestry & railway museum
- Library – youth reading club
- Chamber of Commerce – Business awards sponsor
- Drama and Dance through various schools
- Spruce City Wildlife
- and many others

As shown above there are at least 12 donations listed that Canfor has provided to the Community in 2005.

Establishment of Targets and Future Practices

Targets were established from an estimate of one major donation to the community every two months, therefore 6 a year. The target has been easily meet and should be raised to more accurate reflect the accurate donations that Canfor makes in a single year.

Forecasting and Predicted Trends

This measure is not easy to quantifiably forecast through the modeling process over a defined time frame. However, it is important to identify what the accepted target means to SFM. The use of a “what if scenario” can be beneficial in identifying anticipated future trends for a measure such as this. The number of support opportunities provided in the DFA is an important aspect of SFM because it directly relates to sustaining the local economy, and therefore certain aspects of quality of life for the public. As the target for this measure is stated as, one other scenario should be analysed:

- a) What if the annual number of support opportunities provided in the DFA was considerably less than 6?

If the annual number of support opportunities provided in the DFA was considerably less than 6, the overall economy of the DFA and quality of life for the public could potentially decrease over time. Support opportunities help boost the economy because they can be an indirect economic benefit to the public. If support opportunities were less than 6 annually, local communities would not be receiving an adequate portion of the economic benefits derived from forests through the forest industry. Social values such as quality of life are also tied to annual support opportunities. Local community organizations provide a variety of public benefits and often rely on support opportunities from the forest industry to fund community events. If less than 6 support opportunities were provided annually, many of these community events might not be possible, thereby potentially decreasing the public's quality of life.

Due to the significant impact this measure could have on the local economy and the public's perceived quality of life, Canfor is committed to continue to provide support opportunities on an annual basis.

Monitoring and Reporting Procedures

Support opportunities will be tracked and reported by Canfor community relations' manager annually and reported collectively for the DFA. The donation information will be track using a spreadsheet or database and provided to the strategic planning forester for reporting. The indicator percent will be reported in the annual SFM Plan report for the calendar year January 1st to December 31st.

Due to the significant impact this measure could have on the local economy and the public's perceived quality of life, Canfor is committed to provide ≥ 6 support opportunities on an annual basis.

Responsibility and Continuous Improvement Opportunities

Canfor is responsible for the monitoring, tracking and reporting of this indicator. Specifically, financial/accounting personnel are responsible for determining the support opportunities to fund in the community. Canfor and BC Timber Sales will explore the effectiveness of this indicator in determining whether the public continues to receive economic benefits from the forest industry.

Continuous improvement over the next year will include defining minimum dollar amounts level for cash donations, defining minimum levels for in-kind contributions, and expanding the indicator to include BC Timber Sales.

3.44 Loss Time Accidents

| Indicator Statement | Target and Variance |
|---|----------------------------|
| Number of loss time accidents (days) in Woodland Operations – applies to Canfor only. | Target: 0 Variance: 0 |

This indicator addresses the following CSA-SFM parameter:

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|--|
| <p>1) CCFM Criterion: Multiple Benefits to Society CSA SFM Element: Fair Distribution of Benefits and Costs Value: Fair Distribution of Benefits and Costs Objective: Maintain the distribution of benefits and costs</p> |
|--|

Description of Indicator

The health and safety of forest workers and members of the public is an important objective that is essential to SFM. Canfor considers employee and public safety as a primary focus of all forestry related operations. Evidence of this high priority can be seen in the company mission or policy statements. This indicator was developed to track and report out on the number of loss time workplace accidents that occur within the woodlands division. Two types of workplace accidents are the most common within the forest industry. These are loss time accidents (LTAs), and accidents where medical aid or treatment was necessary but no loss of work time was experienced by the employee. Through this indicator, only LTAs will be tracked and monitored. Monitoring and reporting the number of workplace LTAs will help Canfor identify problems with procedures and increase overall awareness in order to prevent future injuries and LTAs.

Current Practices and Status of Indicator

The current status for this measure is derived through an analysis of safety reports and a tally of all LTAs. Over the last reporting year there were 0 loss time accidents in woodlands within the DFA.

No loss time accidents occurred in the DFA during April 1, 2005 to March 31, 2006.

Establishment of Targets and Future Practices

The target for this indicator was established so that Canfor would operate toward a goal of zero woodlands loss time accidents. Canfor will continue to implement safety programs to reduce accidents and injuries in all aspects of woodland operations.

Forecasting and Predicted Trends

While Canfor will continue to strive for no loss time accidents, the exact level of success they will have in achieving this is difficult to forecast due to the unpredictable nature of forestry woodland operations. However, it is important to identify what the accepted target means to SFM. The number of loss time accidents each year relates directly to social values within the DFA. Therefore, the use of a “what if scenario” is beneficial in identifying anticipated future trends for an indicator such as this. As this indicator states a target of zero, one other scenario should be analyzed:

- a) What if more than the target amount of lost time accidents in Woodland Operations occurred each year?

If a LTAs occurred each year, social values and quality of life could decrease in the DFA. Loss time accidents are usually directly related to safety issues in the workplace. If an employee's perceived risk of being injured on the job increased, there would be less incentive to do the required work. Reduced productivity would likely decrease the overall quality of life in the DFA and community stability could also decline. WCB and other related costs due to accidents in the workplace would likely increase. This would result in a potential decrease of economic values because full economic returns would not be realized from the forest resource.

Productivity and economics aside, any loss time accident has the potential to have tragic consequences for the worker and their family. The target should be achieved for no other reason then it means workers are not being injured on the job. For these reasons, Canfor is committed to maintaining safety as a high priority and will work toward achieving the stated target for this indicator.

Monitoring and Reporting Procedures

Canfor has a safety committee that is responsible for ensuring that standards are in place to promote safe work practices. All accidents are reported to a member of the safety committee once they occur and are recorded for reporting purposes. In addition to queries of accident record databases, the Workers Compensation Board may also be used as a source for DFA accident reports. The number of LTAs will be included in the SFMP annual report for the operating year of April 1st to March 31st.

Responsibility and Continuous Improvement Opportunities

Canfor is responsible for the monitoring, tracking, and reporting of this indicator. Specifically, personnel on safety committees are to ensure all accidents are recorded in the accident record database. Reviews of the database may detect areas of concern that could be improved by changing current practices.

Continuous improvement over the next year will include look at including Canfor contractor's, BCTS staff, and expanding or replacing loss time accidents with near misses or other better indicators.

3.45 Aboriginal and Treaty Rights

| Indicator Statement | Target and Variance |
|---|---|
| No unauthorised forestry activities within legally recognized (Provincial and Federal) treaty areas and Agreement-in Principle areas. | Target: 100% compliance Variance: 0% |

This indicator addresses the following CSA-SFM parameter:

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|---|
| 1) CCFM Criterion: Accepting Society's Responsibility for Sustainable Development CSA SFM Element: Aboriginal and Treaty Rights Value: Aboriginal and Treaty Rights Objective: Recognition and respect for Aboriginal and treaty rights. |
|---|

Description of Indicator

A treaty is a negotiated agreement that spells out the rights, responsibilities and relationships of First Nations and the Federal and Provincial governments (Government of BC, 2005). Depending on the nature of the treaty, specific First Nations will exercise a variety of rights over the area described in the treaty. Any forestry activities that occur in these areas without the permission of the appropriate First Nation peoples could have serious legal, economic, and social repercussions. Respecting Aboriginal treaty rights is a part of sustainable forest management as it protects social and economic values.

Current Practices and Status of Indicator

Two First Nation Bands have asserted Aboriginal interests in the TFL30, the McLeod Lake (Tsekani) and the Lheidli T'enneh Band. The McLeod Lake Band signed a Treaty 8 settlement agreement with the Federal and Provincial governments in 2000. None of the settlement lands are within the TFL30. The Lheidli T'enneh First Nation is currently working on developing a treaty with the Federal and Provincial government that will clarify the nature and extent of Aboriginal rights within the DFA. Canfor and BC Timber Sales have not been informed of any agreement describing treaty rights or Aboriginal rights on TFL30 because of treaty negotiations.

Establishment of Targets and Future Practices

Canfor and BC Timber Sales have set a target of no unauthorized forestry activities within legally recognized treaty areas to uphold legal, social, and economic principles of sustainable forest management. To meet the target, Canfor and BC Timber Sales will review the level of legal compliance with duly established Aboriginal and treaty rights as law and accepted by government.

Currently there is no treaty area identified and no Lheidli T'enneh First Nation has Agreement-in Principle Areas within the DFA boundaries, therefore Canfor and BCTS are in 100% compliance with not harvesting any areas within legally recognized (Provincial and Federal) treaty areas in the DFA.

Forecasting and Predicted Trends

Canfor and BC Timber Sales will respect and be 100% in compliance with duly established Aboriginal rights on the DFA.

While Canfor and BC Timber Sales will take every step possible to avoid unauthorized forestry activities within legally recognized treaty area; their exact level of success in achieving this is difficult to forecast due to the possibility of human error. However, it is important to identify what the accepted target means to SFM. Respecting the legal rights of First Nations people within the DFA is an important aspect of sustainable forest management. Therefore, the use of a "what if scenario" is beneficial in identifying anticipated future trends for an indicator such as this. As this indicator states a target of zero unauthorized activities, one other scenario should be analyzed:

- a) What if there were unauthorized forestry activities within legally recognized treaty areas?

Any unauthorized forestry activity in a legally recognized treaty area could have economic repercussions for Canfor, BC Timber Sales and the First Nation people involved. If the treaty area was relied upon for economic purposes, such as logging, trapping, mushroom picking, etc, the unauthorized activity may damage these resources. The unauthorized activity may have an impact on social values. If the area in question was a site of

cultural significance to First Nation peoples, such as a village site, cemetery, or sacred place, the damage done could be irreversible to both the site and First Nation/ industry relations.

For these reasons, Canfor and BC Timber Sales are committed to preventing any unauthorized forestry activities within legally recognized treaty areas.

Monitoring and Reporting Procedures

The information that is required to monitor this indicator includes a summary of the number of unauthorized forest management operations within legally recognized treaty areas. This information is collected during EMS checklist reviews and harvesting inspections and is stored in Canfor's and BC Timber Sales' databases. The number of incidents will be included in the annual SFM Plan report for the operating year of April 1st to March 31st.

Responsibility and Continuous Improvement Opportunities

Canfor's Strategic Planning Forester and BC Timber Sales' Planning Forester is responsible for ensuring no activities are planned within legally recognized treaty areas. The Woodlands Manager and harvesting supervisors are responsible for monitoring field operations to ensure no accidental trespasses occur. If an unauthorized activity occurs in a treaty area, the effected First Nation will be contacted immediately and, if required, steps will be taken to rehabilitate any damage. Consultation with First Nations people during Forest Stewardship planning processes will provide opportunities for both parties to determine how to best conduct forest operations in the vicinity of legally recognized treaty areas.

3.46 FSP Referral and PMP Referral to First Nations

| Indicator Statement | Target and Variance |
|---|--|
| All Forest Stewardship Plan (FSP) and associated major amendments are referred to affected Aboriginal peoples | Target: 100% referrals Variance: 0% |
| Pest Management Plans (PMP) and associated major amendments are referred to affected Aboriginal bands | Target: 100% referrals Variance: 0% |

This indicator addresses the following CSA-SFM parameter:

| |
|--|
| 1) CCFM Criterion: Accepting Society's Responsibility for Sustainable Development CSA SFM Element: Aboriginal and Treaty Rights Value: Aboriginal and Treaty Rights Objective: Recognition and respect for Aboriginal and Treaty Rights |
|--|

Description of Indicator

This indicator is designed to evaluate the success in providing opportunities to Aboriginal peoples to be involved in forest management planning processes. Specifically, all Forest Stewardship Plans and associated major amendments are to be referred to affected Aboriginal groups for their input. Incorporation of First Nation people and their unique perspective into the forest planning process is an important aspect of SFM. This indicator will contribute to respecting the social, cultural and spiritual needs of the people who traditionally and currently use the DFA for the maintenance of traditional aspects of their lifestyle.

As pesticides may have to be used within the DFA to meet certain forestry objectives, Pest Management Plans will be prepared to outline their use. This use may include areas of interest to various First Nations peoples within the DFA and the plans need to be referred to them for input. The location and type of pesticide use may change as a result of their consultation.

This indicator will measure the success of Canfor and BC Timber Sales in having all Pest Management Plans and associated major amendments referred to affected Aboriginal bands.

Current Practices and Status of Indicator

Canfor and BC Timber Sales currently have individual working relationships with local First Nation peoples within the DFA. Currently Canfor has an approved Forest Stewardship Plan that covers the DFA. Both of the First Nation communities have had the opportunity for participation and input in the Forest Stewardship Plan development within the DFA.

In August and October 2004, Canfor sent letters out to the First Nation communities asking for their input prior to drafting the FSP for public review. In addition, First Nations were also invited to a public open house to review and comment on the plan. First Nations were then phoned to setup a meeting to review and gather comments on the draft FSP. A meeting was held with one of the Bands to further explain the contents of the FSP. No written comments were received from either of the Bands.

BC Timber Sales has an approved Forest Stewardship Plan within the Prince George Forest District, however it does not currently cover the DFA. During 2008, BC Timber Sales will be amending the approved Forest Stewardship Plan to include the DFA and is currently being referred to refer to the First Nations bands.

In the past, Canfor and BC Timber Sales have used a variety of pesticides to achieve forestry objectives. The main use has been to control competing vegetation on regenerating cutblocks. Historically, pesticide use was conducted under the auspices of a Pesticide Use Permit (PUP). Referrals to affected Aboriginal bands were a component of the PUP application process. On December 31, 1994, the new Integrated Pest Management Act came into effect in British Columbia. Rather than obtain PUPs, industrial users of non-high risk class pesticides are now required to prepare a Pest Management Plan (PMP) as per the requirements under the Act and its regulations. Public consultation is a requirement for PMP preparation.

In January 2005, Canfor referred the 2005 PMP to both First Nations bands. In addition, Canfor placed an ad in the local paper providing the public including First Nations the opportunity to review and provide comment.

In February 2006, BC Timber Sales referred the 2006 PMP to First Nations bands. In addition, BC Timber Sales placed an ad in the local paper providing the public including First Nations the opportunity to review and provide comment.

Establishment of Targets and Future Practices

The indicator target of 100% was established to reflect Canfor's and BC Timber Sales' commitment to providing First Nations peoples with opportunities into the management of forest lands within the DFA. All future PMP major amendments will be referred to affected Aboriginal bands giving them an opportunity to express opinions, knowledge, and concerns on the use of pesticides within the DFA and to provide input at the Forest Stewardship Plan development stage. Current practices to meet this commitment will be continued and improved where necessary to meet the indicator target.

Forecasting and Predicted Trends

This indicator is not easy to quantifiably forecast over a defined time frame. However, it is important to identify what the accepted target means to SFM. Referring all FSP and associated major amendments to effected First Nation peoples directly affects social values and indirectly affects economic values of SFM. Therefore, the use of a "what if scenario" is beneficial in identifying anticipated future trends for this indicator. As this indicator has a stated target of referring all FSP and associated major amendments to effected Aboriginal peoples, one other potential scenario should be developed:

- a) What if no FSPs or associated major amendments were referred to effected Aboriginal peoples?

If FSPs or associated major amendments were not referred to affected aboriginal bands, adequate attention may not be given to valuable Aboriginal input. Aboriginal input into the forest planning process is required to adequately consider cultural heritage values within the DFA and to ensure that forest management respects treaty rights. As some areas of cultural significance may not be in legally recognized treaty areas or widely known by the general public, the only way for the forest industry to be aware of them is from First Nation peoples themselves. Failure to refer plans to them may result in significant loss of First Nation's cultural features. Aboriginal participation in the planning processes could decrease and impacts to other resource values such as cultural heritage, non-timber forest resources and biological richness could potentially occur. Traditional knowledge could also potentially be lost if FSPs and associated major amendments are not referred to the affected Aboriginal peoples. Economically, Canfor and BC Timber Sales may lose clients if they perceive that Aboriginal peoples input is not valued.

It is anticipated that all FSP and major amendments will be referred to Aboriginal peoples, and it is hoped that First Nation people become more involved with all forest planning processes.

While Canfor and BC Timber Sales have every intention of referring all PMP and associated major amendments to affected Aboriginal bands, their exact level of success in achieving this target is difficult to forecast due to the possibility of human error. However, it is important to identify what the accepted target means to SFM. Respecting the concerns and opinions of First Nations in the DFA is an important aspect of sustainable forest management. Therefore, the use of a "what if scenario" is beneficial in identifying anticipated future trends for an indicator such as this. As this indicator states a target of 100% of all PMP and associated major amendments are to be referred to effected Aboriginal bands, one other scenario should be analyzed:

- a) What if no PMP or associated major amendments were referred to effected Aboriginal bands?

The use of pesticides in the DFA without Aboriginal peoples input or knowledge could have economic and social repercussions. Aboriginal peoples have historically used many areas within the DFA for a variety of reasons. These include hunting, trapping, berry and mushroom picking and fishing. They have often had concerns over the impact pesticides may have on these resources, and have expressed their interest in being notified of pesticide use in their areas of interest. If they were not given an opportunity to participate in the PMP planning process they would lose faith in the forest industry's commitment to public consultation. The broader public may gain the perception of a forest industry using potentially dangerous substances without informing First Nation people. The negative publicity of such perceptions may impact the economy of the DFA and undermine confidence in the SFM process.

For these reasons, Canfor and BC Timber Sales are committed to referring all PMP and associated major amendments to affected Aboriginal bands.

Monitoring and Reporting Procedures

Canfor and BC Timber Sales will maintain a list of all First Nation bands and their areas of interest within the DFA. During Forest Stewardship Plan/ major amendment preparation, all effected Aboriginal groups will be contacted as per Canfor's and BC Timber Sales' communication strategies for referral. A record will be kept of each referral in Canfor's and BC Timber Sales' referral tracking systems. Canfor and BC Timber Sales will track and monitor PMP/amendment referrals to Aboriginal peoples through their referral tracking systems.

This system will be queried and the indicator percentage will be reported in the annual SFM Plan report for the operating year of April 1st to March 31st.

Responsibility and Continuous Improvement Opportunities

Planning foresters are responsible for referring all FSP and associated major amendments to the affected Aboriginal groups. They are also responsible for updating the referral tracking system to record these referrals. Canfor and BC Timber Sales will work co-operatively with First Nation peoples to solicit their involvement and input into planning processes.

Silviculture Foresters are responsible for ensuring affected Aboriginal groups are referred to in the preparation of PMP. If pesticides are used in an area of Aboriginal interest without their knowledge, the affected Aboriginal group will be contacted immediately and, if required, steps will be taken to consider their input. Information sharing with Aboriginal peoples during PMP planning processes will provide opportunities for both parties to discuss the application of pesticides in the DFA and may provide Canfor and BC Timber Sales with knowledge on how to minimize the possible negative impacts of pesticide use.

Continual improvement will mainly focus on assessing the effectiveness of these FSP and PMP input opportunities.

3.47 Heritage Conservation Act

| Indicator Statement | Target and Variance |
|--|------------------------------|
| Percent of forest operations consistent with the Heritage Conservation Act | Target: 100% Variance: 0% |

This indicator addresses the following CSA-SFM parameter:

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|--|
| <p>1) CCFM Criterion: Accepting Society's Responsibility for Sustainable Development CSA SFM Element: Respect for Aboriginal Forest Values, Knowledge, and Uses Value: Aboriginal Forest Values, Knowledge, and Uses Objective: Incorporation of Aboriginal forest values, knowledge, and uses in forest management</p> |
|--|

Description of Indicator

The *Heritage Conservation Act* has as its stated purpose "to encourage and facilitate the protection and conservation of heritage property in British Columbia". The act prohibits activities that will damage specific heritage resources. The Act states a person must obtain a permit from the Minister of Community, Aboriginal and Women's Services before they may:

- damage or alter a burial place with historical or archaeological value;
- damage or alter First Nations rock paintings or carvings with historic or archaeological value;
- damage, alter, or remove any heritage object from a site that contains artefacts or other evidence of human habitation or use before 1846.

There are heritage resources within the DFA that are protected by the Act. Some of the more common features that are of concern for forestry operations are culturally modified trees (trees which were modified by First Nations people's use), cache pits (excavated food storage pits), and pit house sites. Measures must be taken to ensure forest operations are consistent with the Heritage Conservation Act to preserve and manage these features to meet social and cultural needs of First Nation peoples and the broader community in the DFA.

This indicator is designed to ensure that forest operations are conducted to conserve cultural features. By ensuring forest operations are consistent with legislation, Canfor and BC Timber Sales contribute to SFM by respecting important First Nations' cultural features that are a testament to their long connection to the DFA. Tracking the level of consistency will allow Canfor and BC Timber Sales to evaluate how successful this implementation is and improve procedures if required.

Current Practices and Status of Indicator

The Heritage Conservation Act was passed in 1996 and was the latest in a series of acts designed to protect British Columbia's heritage resources. Canfor and BC Timber Sales have adhered to the Act in conserving cultural resources within the DFA at a variety of planning and operational stages.

Known features protected under the Act are relatively easy to plan forest operations around. Forest Stewardship Plans have also used an Archaeological Predictive Model to assess the potential presence of unknown archaeological resources within proposed harvest areas or road access corridors. Where activities are proposed within zones of high archaeological potential, Canfor and BC Timber Sales conduct site level Archaeological Impact Assessments (AIA) to identify, assess and record any archaeological resources that may be present. Trained archaeologists identify resources that are to be protected under the Heritage Conservation Act.

Specific requirements to conserve cultural resources are prescribed in site plans. These strategies may include alteration if the appropriate site alteration permit is obtained. Harvest and subsequent silviculture inspections ensure that strategies are implemented as stated in the site plan.

From April 1, 2005 to March 31, 2006, 100% of Canfor and BCTS forest operations were consistent with the Heritage Conservation Act.

Establishment of Targets and Future Practices

The target was established by the legal requirement for all forest operations to be consistent with the Heritage Conservation Act. The target also reflects Canfor's and BC Timber Sales' commitment to manage the cultural and historic values of the DFA in accordance with the law to protect these values for future generations. Canfor and BC Timber Sales will continue to use AIA to detect unknown resources, determine if they are under the Heritage Conservation Act and will conduct forest operations in a manner consistent with the Act.

Forecasting and Predicted Trends

It is anticipated that the target of 100% of forest operations will be consistent with the Heritage Conservation Act. The exact level of success is difficult to forecast as it is operational in nature and is dependent on the nature of the site, weather, and human error. However, it is important to identify what the accepted target means to SFM. Conservation of cultural features protected under the Heritage Conservation Act primarily influences social values within the DFA. Therefore, the use of a "what if scenario" is beneficial in identifying anticipated future trends for this indicator. As this indicator currently has a target set at 100%, one other scenario should be identified:

- a) What if only 50 % of forest operations were consistent with the Heritage Conservation Act?

The failure to have 100% of forest operations consistent with the Act could lead to significant cultural loss to both First Nations and the general public within the DFA. Contributions to planning processes by each group would likely be reduced. Aboriginal communities may no longer become involved if they felt their history was not conserved in accordance with the law. Members of the general public may also lose faith in the forest management and planning processes if the cultural heritage of the DFA was not recognized as an important value.

In addition to the social and cultural impacts that may occur from forest operations being inconsistent with the Heritage Conservation Act, there may be economic penalties to pay. Significant fines may be levied against Canfor and BC Timber Sales for being negligent in their responsibilities, and Canfor and BC Timber Sales may lose clients that are angered by the destruction of heritage features.

The above "what if scenario" helps to identify some of the potential future impacts of not achieving the stated target for this indicator. Therefore, Canfor and BC Timber Sales will continue to ensure that 100% of forest operations are consistent with the Act.

Monitoring and Reporting Procedures

Canfor and BC Timber Sales will continue to conduct pre-work meetings prior to the start of projects, monitoring inspections as the work is progressing and final inspections once the work is completed to ensure forest operations are consistent with the Heritage Conservation Act. These initial, in between and final checks are part of Canfor's and BC Timber Sales' EMS system and the future trend of this indicator will remain at the target of 100% if all processes and protocols are followed.

If a non-compliance with the Act occurs in the field, it will be recorded on an activity inspection form and then entered into an incident tracking database. The incident will also be reported to the Heritage Branch of the Ministry of Community, Aboriginal and Women's Services and the Ministry of Forests and Range. The indicator percentage will be reported in the annual SFMP report for the operating year of April 1st to March 31st.

Responsibility and Continuous Improvement Opportunities

Planning foresters are responsible for identifying areas of cultural heritage during the Forest Stewardship Plan development stage through the Archaeological Predictive Model. Foresters responsible for preparing road plans and site plans have to ensure that prescribed management activities are consistent with the Heritage Conservation Act. Harvesting and Silviculture supervisors are responsible for implementing the site plan requirements on the ground.

Canfor and BC Timber Sales will investigate the possibility of increasing the accuracy of predicting the presence of archaeological sites. Canfor and BC Timber Sales, in co-operation with First Nations, the public and local archaeologists, will explore the effectiveness of strategies utilized to minimize impact to cultural resource features.

3.48 Aboriginal Participation in Planning Process

| Statement of Indicator | Target and Variance |
|--|--|
| Documented opportunities for Aboriginal peoples' participation in developing public plans. | Target: ≥ 1 meaningful face to face meeting per year Variance: 0 |

This indicator addresses the following CSA-SFM parameter:

| |
|---|
| <p>1) CCFM Criterion: Accepting Society's Responsibility for Sustainable Development. CSA SFM Element: Respect for Aboriginal Forest Values, Knowledge and Uses. Value: Aboriginal forest values, knowledge and uses. Objective: Incorporation of Aboriginal forest values, knowledge and uses in forest management.</p> |
|---|

Description of Indicator

The incorporation of Aboriginal peoples' needs into forest planning is a key aspect to sustainable forest management. As such, this indicator contributes to respecting the social, cultural heritage and spiritual needs of people who traditionally and currently use the DFA for the maintenance of traditional aspects of their lifestyle. Working with Aboriginal people to identify, define and develop management strategies for these special and unique needs, is an important component of being able to maintain elements on the landscape for the maintenance of traditional lifestyle values of Aboriginal peoples.

This indicator will list and report out on all documented opportunities provided to local Aboriginal peoples to participate in the development of forest management operational plans.

Current Practices and Status of Indicator

Public plans refer to the Management plan (5 year), the Forest Stewardship Plan (5 year) and the SFM plan (3-5 years). The target of one meeting per year with each Aboriginal people group may increase if major issues arise within the DFA.

Canfor has developed "Creating Opportunities for Public Interest" process, which is a communication framework for interested parties (including Aboriginal Peoples) to participate in the planning process and present issues of concern. BC Timber Sales has a similar process called "Keeping in Touch" that provides for tracking of communications with interested parties. Both processes include the gathering of information from the interested parties and incorporating this information into the development of public plans. Canfor and BC Timber Sales presently have working relationships with two of the local First Nations groups; the McLeod Lake Indian Band and the Lheidli T'enneh First Nation.

The McLeod Lake Indian Band is an active member of the CSA-SFM certification Public Advisory Group and this is an employee of the Lheidli T'enneh First Nations attending the meetings. Current uses of the DFA by the Lheidli T'enneh people include but are not limited to berry picking, medicinal herb gathering, fishing, hunting, and firewood gathering. More than 20 Aboriginal traditional use sites have been identified within the DFA. One of the greater challenges remains in working on the cultivation of long-term working relationships between these groups and Canfor and BC Timber Sales, which will lead to a better understanding of each other's needs and interests.

Canfor has meet with the Lheidli T'enneh Band Chief over the last year to discuss ways to more effectively provide and gather information for the development of public plans. Recently, Canfor has meet with the McLeod Lake Indian Band to Chief to discuss interest in developing joint strategies on the management around cultural heritage trails and culturally modified trees. Therefore a total of 2 face to face meeting occurred during the reporting year.

Establishment of Targets and Future Practices

The target of at least one meaningful face to face meeting with each Aboriginal group was set to facilitate opportunities for information exchange. Canfor and BC Timber Sales will continue to consult with Aboriginal people groups as forest management activities continue within the DFA. Ensuring that Aboriginal peoples within the DFA have at least one opportunity for a face to face meeting per year to provide input into the forest management planning process, thus demonstrating Canfor's and BC Timber Sales' commitment to respecting Aboriginal forest values, knowledge and uses.

Forecasting and Predicted Trends

As more knowledge is gained regarding the special and unique needs of Aboriginal peoples, it is anticipated that these elements will be further integrated with current and future forest management planning. As traditional ecological knowledge of Aboriginal peoples is developed, Canfor and BC Timber Sales will incorporate this information into scenarios used to forecast future forest conditions and future forest management. Without such consultation confidence in the SFMP process might be undermined and forest values may be negatively affected.

Monitoring and Reporting Procedures

Monitoring of meetings held between Aboriginal peoples and Canfor, and Aboriginal peoples and BC Timber Sales, for the purposes of input into forest management planning is the responsibility of the Strategic Planning Forester (Canfor) and Planning Forester (BC Timber Sales) who will include the total number of meetings in the SFMP annual report.

Responsibility and Continuous Improvement Opportunities

Strategic Planning Forester (Canfor) and Planning Forester (BC Timber Sales) will be responsible for developing opportunities with First Nations to get more involved in the public planning processes on the DFA. Other licensees within the two First Nations traditional territory will be approached to become involved in working together to provide joint opportunities.

3.49 Aboriginal Issues Evaluated

| Statement of Indicator | Target and Variance |
|---|--------------------------------|
| Percentage of issues raised by Aboriginal peoples evaluated by Canfor and BC Timber Sales. | Target: 100% Variance: -10% |
| Percentage of issues raised by Aboriginal Chief & Council or their representative developed into mutually agreed upon strategies. | Target: 100% Variance: -50% |

This indicator addresses the following CSA-SFM parameter:

- 1) **CCFM Criterion:** Accepting Society's Responsibility for Sustainable Development
CSA SFM Element: Respect for Aboriginal Forest values, knowledge and uses.
Value: Aboriginal forest values, knowledge and uses
Objective: Incorporation of Aboriginal Forest values, knowledge and uses in Forest Management.

Description of Indicator

Ensuring issues of concern raised by Aboriginal peoples as a result of forest management decisions are evaluated by Canfor demonstrates respect for their unique perspective and historical connection with the forest. Recognition of Aboriginal forest values, knowledge and uses is an important component of sustainable forest management. Monitoring issues of concern raised by Aboriginal peoples with respect to the forest operations is the intent of this indicator.

Incorporating management strategies into the planning process in order to resolve issues raised by Aboriginal leadership is a key aspect to sustainable forest management. This indicator contributes to respecting the social, cultural heritage and spiritual needs of people who traditionally and currently use the DFA for the maintenance of traditional aspects of their lifestyle.

Monitoring how issues raised by Aboriginal Chief and Council are addressed reflects Canfor's and BC Timber Sales' commitment to SFM.

Current Practices and Status of Indicator

Canfor's "Creating Opportunities for Public Interest Process" management system is a communication framework. It achieves this by establishing goals that support good communication, by defining how the communications process will operate, who will be responsible, and by measuring system performance through the use of key performance indicators. This SFM indicator measures the success of meeting the communication strategy requirements as outlined in "Creating Opportunities for Public Interest".

"Keeping in Touch" (KIT) tracks communications between BC Timber Sales and all interested parties that they notify when forestry operations/ developments are to occur. These interested parties include private landowners, lodge operators, trappers, or hunting guides. Strategies have been designed to ensure that information is communicated to these individuals in a timely and efficient manner. This communication considers non-timber users and inhabitants of the DFA and realizes that forestry operations can disrupt lives and businesses. BC Timber Sales is currently in the process of enhancing its communications strategy and exploring possibilities of incorporating it into its existing woodlands information management system, Genus.

The following key performance indicators apply to this measure and will be applied to communication strategies:

- 100% of communications from resource user will be responded to within 30 days
- 100% of commitments made to resource users are delivered within the time frame specified
- 100% of the applicable public is sent notification of planning and development activities associated with TFL30 forest management activities.

Procedures are also in place specifically for First Nation peoples to review and provide feedback on Canfor's and BC Timber Sales' forest operations. These procedures also provide timelines and lay out who is responsible for addressing the issues raised.

During the reporting period, no issues were raised by Bands regarding forest management on the DFA. Therefore no issues needed to be evaluated by Canfor and BC Timber Sales. As Canfor, BCTS and the Bands work together on the public advisory process, relationship will strengthen and issues will become more readily apparent.

Establishment of Targets and Future Practices

The indicator's target of 100% demonstrates Canfor's and BC Timber Sales' commitment to addressing issues raised by Aboriginal peoples during the SFM process. A 10% variance was established, as there are often factors that delay a response such as, difficulties Aboriginal people participating, further research may be required or insufficient understanding of the issues. All public input is an important aspect of the SFM process however, Canfor and BC Timber Sales recognize that the concerns of Aboriginal peoples deserve special attention. Therefore, it is paramount to ensure that all issues raised by Aboriginal peoples are addressed. If the target is not met in the future, strategies will be developed to improve practices, or targets will be adjusted to better reflect practices within the DFA.

Forecasting and Predicted Trends

It is the intent of Canfor and BC Timber Sales to meet the target, and it is anticipated this goal will be met. The exact level of success is not easy to quantifiably forecast as it relies on unpredictable factors such as human error. However, it is important to identify what the accepted target means to SFM. The response to issues raised directly affects social values of SFM. Therefore, the use of a "what if scenario" is beneficial in identifying anticipated future trends for an indicator such as this. As this indicator has a stated target of 100%, one other potential scenario should be developed:

- b) What if there were only 50% of Aboriginal issues raised were addressed by Canfor and BC Timber Sales staff?

If there were only 50% of the issues raised by Aboriginal people were addressed; adequate attention would not be made to valuable public input. Public input into the SFM process is required to adequately consider other resource values within the DFA. If only 50% of issues were addressed, public participation into SFM could decrease and losses to Aboriginal forest values uses and knowledge could be negatively impacted. Confidence in the SFM process could be jeopardized if Aboriginal peoples felt the issues of concern to them were not being addressed,

The above "what if scenario" analysis implies that a balance of values can be achieved through achievement of the established target. Therefore, Canfor will continue to comply with the communication requirements as outlined in 'Creating Opportunities for Public Interest' (Management System # 6, Canfor) particularly in its application to Aboriginal peoples. BC Timber Sales will continue to follow its communication requirements relative to Aboriginal peoples.

Monitoring and Reporting Procedures

The RACI Process for each aspect of communication is outlined in the "Creating Opportunities for Public Interest" document. All communications will be documented within Canfor's and BC Timber Sales' databases, which will enable tracking of all communication and responses. A summary of the percentage compliance with the procedures will be reported on an annual basis for the operating period of April 1 to March 31.

Responsibility and Continuous Improvement Opportunities

The Strategic Planning Forester (Canfor) and Planning Forester (BC Timber Sales) are responsible for reporting and the tracking results to ensure issues raised by Aboriginal peoples are addressed. Opportunities to improve the performance of this indicator will be discussed within the PAG and internally by Canfor and BC Timber Sales staff.

3.50 Aboriginal Strategy Incorporation

| Statement of Indicator | Target and Variance |
|--|--|
| Incorporation of mutually agreed upon strategies to address Aboriginal peoples' values, knowledge, and uses in public plans for the DFA. | Target: 100%, Annually Variance: 0% |
| Percentage of forest operations consistent with mutually agreed upon strategies. | Target: 100% Variance:0% |

These indicators address the following CSA-SFM parameter:

- 1) **CCFM Criterion:** Accepting Society's Responsibility of Sustainable Development.
CSA SFM Element: Respect for Aboriginal forest values, knowledge and uses.
Value: Aboriginal forest values knowledge and uses.
Objective: Incorporation of Aboriginal forest values, knowledge and uses in Forest Management

Description of Indicator

The development of mutually agreed upon management strategies is only the first step in SFM. Incorporation of those strategies into the public plans demonstrates recognition of Aboriginal forest values, knowledge, and uses. Public plans for these measures refers to the Management plan (5 year), the Forest Stewardship Plan (5 year) and the SFM plan (3-5 years). Monitoring adherence to these strategies is a measure of the success of these strategies to address the issues they were developed for.

These indicators will report on the incorporation and implementation of the strategies that were developed to address Aboriginal peoples issues. As these strategies are put into place tracking of forest activities compliance with these strategies will begin to determine whether these concerns are being addressed appropriately.

Current Practices and Status of Indicator

Currently, Canfor is involved in creating opportunities for interested parties (including Aboriginal Peoples) through the gathering of information from the interested parties and incorporating this information in the development of public plans. Canfor presently has working relationships with two of the local First Nations; the McLeod Lake Indian Band and the Lheidli T'enneh First Nation. Furthermore, both of these First Nation groups are involved in the CSA-SFM certification Public Advisory Group. Current uses of the DFA by the Lheidli T'enneh people include, but are not limited to, berry picking and medicinal herb gathering, fishing, hunting, firewood gathering. More than 20 aboriginal traditional use sites exist within the DFA. Canfor has provided many opportunities for Aboriginal people to provide input into our public plans as shown in the following table. Very low response has been received using newspaper and notification letters, however involvement on the PAG process has yielded a higher response.

Today no mutually agreed upon strategies to address Aboriginal peoples' values, knowledge, and uses in public plans have been developed for use in the DFA. Therefore the percentage of forest operations consistent with mutually agreed upon strategies cannot be reported out on.

One of the Bands was very interested in working on locating, geo-referencing and developing management strategies for cultural importance trails in the area.

Establishment of Targets and Future Practices

Canfor and BC Timber Sales are committed to implementing all of the mutually agreed upon strategies as stated in the public plans. This commitment is demonstrated by the target of 100% (variance 0%) for both indicators. It is anticipated that these targets will be met once mutually agreed upon strategies are in place.

Immediate focus for the future is developing a workplan to meet with the Band to discuss working together towards developing a joint management strategy for cultural trails.

Forecasting and Predicted Trends

A target of 100% has been established for this measure to reflect Canfor's and BC Timber Sales' commitment to incorporation and implementation of strategies developed as a result of Aboriginal peoples input into the planning process. It is helpful to consider a "what if scenario" for these measures to assess the importance of these measures to sustainable forest management. As the indicators currently have a target of 100%, one other scenario should be identified:

a) What if the mutually agreed upon strategies to address Aboriginal peoples' values, knowledge and uses were not incorporated into the public plans and/or forest operations were not consistent with the strategies?

If the mutually agreed upon strategies developed were not incorporated into the public plans and/or these strategies were not adhered to in forestry activities, confidence in the entire public consultation process would be jeopardized. It is possible that Aboriginal groups would not participate in the public input process if they did not perceive their concerns were being incorporated into the planning process. Forest values and uses may be diminished through forest operations.

The above "what if scenario" helps to identify some of the potential future impacts of not achieving the stated targets for this measure. Therefore, Canfor and BC Timber Sales will incorporate and implement the mutually agreed upon strategies developed through Aboriginal people's consultation.

Monitoring and Reporting Procedures

The RACI Process for each aspect of communication is outlined in the "Creating Opportunities for Public Interest" document. The strategic planning forester will approach other licensees to inquire whether there is a willingness to work together with the Band in their traditional territory. All communications will be documented within Canfor's and BC Timber Sales databases, which will enable tracking of all communication and responses. A summary of the percentage compliance with the procedures will be reported on an annual basis for the operating period of April 1 to March 31.

Responsibility and Continuous Improvement Opportunities

The Strategic Planning Forester (Canfor) and Planning Forester (BC Timber Sales) are responsible for reporting and the tracking results to ensure issues raised by Aboriginal peoples are addressed. Opportunities to improve the performance of this indicator will be discussed within the PAG and internally by Canfor and BC Timber Sales staff.

3.51 PAG Follow up Survey

| Indicator Statement | Target and Variance |
|---|------------------------------|
| Percentage of people leaving the PAG process receiving a follow-up interview survey | Target: 100% Variance: 0% |

This indicator addresses the following CSA-SFM parameter:

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|--|
| <p>1) CFFM Criterion: Accepting Society's Responsibility for Sustainable Development CSA SFM Element: Public Participation Value: Public participation in decision making processes. Objective: A clear process for wide public participation in SFM.</p> |
|--|

Description of Indicator

Public participation in the SFM planning process is essential to understanding and respecting local values and concerns. A follow -up interview in the form of a survey provides the public with an opportunity to express their satisfaction with the entire process. The information collected from these surveys can be used as part of the continuous improvement SFM process. In essence taking advantage of the hind site of those leaving the PAG committee to better the process

Current Practices and Status of Indicator

The process for addressing this measure is now in place. The PAG Facilitator oversees the follow up survey for those members leaving the PAG. Survey questions are designed to assess satisfaction with the entire PAG experience, suggestions for improvement and concerns with the SFMP process. The results of this survey are reported to the PAG and a course of action to address concerns raised is determined.

Over the last year, one PAG member has left the public advisory group process. This occurred before the formal follow-up questionnaire was in place, none the less the facilitator called the previous member and discussed reasons for leaving. Therefore, 100% of people leaving the PAG process during 2005/06 have received a follow-up interview.

Establishment of Targets and Future Practices

A target of 100% of the PAG members leaving the PAG receive a follow up interview to demonstrate Canfor's and BC Timber Sales' commitment to continuous improvement and public participation.

Forecasting and Predicted Trends

This measure is expected to achieve it's target of 100% however it is beneficial to consider what the benefits of the target mean to SFM. Therefore, the use of a "what if scenario" is useful in identifying anticipated future trends for the indicator. As the indicator currently has a target of 100%, one other scenario should be identified:
a) What if no follow up surveys were conducted with those people leaving the PAG process?

If there were no follow up surveys conducted with past PAG members then a valuable source of information may be lost. The past PAG members have developed a good understanding of the SFM process and have insight into possible improvements. Perhaps concerns and issues which PAG members only felt comfortable sharing after they had left the process would not be addressed and the opportunity for continuous improvement of the SFM process would suffer. Present PAG members might feel that public concerns are not being heard and lose confidence in the PAG process. The above scenario outlines some of the possible outcomes of not conducting PAG follow up surveys. Therefore, Canfor and BC Timber Sales will continue to comply with this measure as part of its commitment to SFM.

Monitoring and Reporting Procedures

The PAG facilitator is responsible for ensuring that the past PAG follow up surveys are completed as outlined and to report on the findings.

Responsibility and Continuous Improvement Opportunities

The follow up survey results will be reviewed by the PAG and improvements made to the SFM process where needed. The survey itself will be reviewed on a regular basis to ensure it is achieving it's objective. Continuous improvement over the next year will include expanding the indicator to include inactive members.

3.52 Number of Public Advisory Group Meetings

| Indicator Statement | Target and Variance |
|---|--|
| Number of times Public Advisory Group (PAG) Terms of Reference reviewed | Target : ≥ 1 review per year Variance: 0 |
| The number of Public Advisory Group meetings per year | Target: ≥ 1 meeting annually Variance: 0 |

This indicator addresses the following CSA-SFM parameter:

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| <p>1) CCFM Criterion: Accepting Society's Responsibility for Sustainable Development CSA SFM Element: Public Participation Value: Public participation in decision making processes Objective: A clear process for wide public participation in SFM</p> |
|--|

Description of Indicator

This indicator monitors the reviews of the Terms of Reference document that has been developed in consultation with the PAG, and which has been accepted for use in all future PAG meetings. The Terms of Reference document is an important part of the public participation component of this SFMP. SFM requires public participation and the PAG Terms of Reference ensure these requirements are met in a credible and transparent fashion. The Terms of Reference document will be reviewed at least once annually unless consensus from the group suggests otherwise.

The Public Advisory Group is necessary to ensure that sustainable forest management occurs with "...decisions that are made as a result of informed, inclusive and fair consultation with local people who are directly affected by, or have an interest in, sustainable forest management."¹ The PAG represents a diverse range of interest specific on the DFA. As such, each member on the PAG must be able to have effective and fair interaction and communication with one another, including Canfor and BC Timber Sales, to ensure all values receive meaningful and fair consideration. The Terms of Reference document is intended to provide the necessary framework and protocol to ensure the effective input from PAG representatives.

The TFL30 PAG is made up of a diverse set of representatives that have various defined interests, values or specific uses of the forest resource within the DFA. The PAG provided valuable input into the initial development of values, indicators, measures and targets for this SFMP. PAG members helped to identify local issues and values for the DFA, which forestry managers consider during the management and planning process. The PAG will continue to provide guidance, input and evaluation throughout the SFMP process, including all aspects of implementation and continual improvement of the plan over time. This indicator provides information regarding how often the PAG will meet on an annual basis.

Current Practices and Status of Indicator

The initial Terms of Reference document was developed by the PAG and accepted as part of the SFMP process on October 30, 2000. The PAG Terms of Reference will be reviewed at least once annually to ensure it is up to date with the present day context of SFM. Canfor and BC Timber Sales will ensure that PAG members are given adequate notice as to when the Terms of Reference document will be reviewed. This review should be part of a scheduled PAG meeting so that all participants are aware of review timelines. Canfor and BC Timber Sales will maintain the Terms of Reference document so that any revisions resulting from an annual review will be made and a new document will be distributed to PAG members.

The public advisory group reviewed the terms of reference on October 2001, May 2002, April 2003, October 2003, October 2004 and December 2005.

In preparation for CSA-SFM re-certification under Z809-02, the public advisory group was asked to meet more frequently in later 2005 and early 2006. Between September 1, 2005 and April 1, 2006, the Public Advisory Group met 11 times to develop the Values, Goals, Indicators and Objectives for CSA-SFM TFL30plan.

Establishment of Targets and Future Practices

The target for the DFA PAG was established from a review of other similar PAG processes. Scheduled meetings of one or more times a year will allow opportunity for the PAG to have input into the SFMP, input and

comment regarding continual improvement of the plan and feedback regarding adaptive management processes that are developed over time. Requirements to convene the PAG will be dependent on the tasks that may require the guidance, input and/or evaluation of PAG members. One or more meetings per year are considered necessary to keep the PAG informed and up to date on issues regarding SFM in TFL30.

Forecasting and Predicted Trends

The number of PAG meetings per year affects primarily the social values identified within the DFA. Therefore, the use of a “what if scenario” is beneficial in identifying anticipated future trends for this indicator. As the target is currently set at greater than or equal to one meeting per year, one other scenario should be identified:

- a) What if there were no future PAG meetings?

If there were no future PAG meetings for TFL30, social values of SFM could potentially be reduced. Without regular PAG meetings, public participation requirements would not be fulfilled. Without local public comment, the plan may not reflect the needs of the TFL30. Sustainability of the forest resource would be more difficult to achieve as locally important values might be overlooked without sufficient public input. Another potential effect of having no PAG meetings would be a reduced public acceptance of the plan and potential scepticism of the overall intent. General understanding of SFM and resulting initiatives would also likely be reduced and future goals identified by Canfor and BC Timber Sales would be more difficult to achieve.

Due to the impact this indicator could have on important social values of SFM, Canfor and BC Timber Sales are committed to achieving ≥ 1 PAG meetings per year.

The target of at least one annual review of the PAG Terms of Reference is expected to be met. The exact level of success in meeting this target is not easy to quantifiably forecast over a defined time frame. However, it is important to identify what the accepted target means to SFM. Annual review and maintenance of the SFMP PAG Terms of Reference to ensure a credible and transparent process primarily affects the social values identified within the DFA. Therefore, the use of a “what if scenario” is beneficial in identifying anticipated future trends for an indicator such as this. As this indicator currently has a target set at one or more reviews per year, it is important to identify one other potential scenario:

- a) What if the PAG Terms of Reference document was never reviewed?

If the PAG Terms of Reference document was never reviewed, the PAG process would potentially cease to be credible and transparent. This could result in overall dissatisfaction with the PAG and reduced incentive to continue participating in the process. Without local public comment, this plan would potentially not reflect the DFA's changing values over time. Sustainability of the forest resource would then be more difficult to achieve as locally important values might be overlooked without sufficient public input. Another potential effect of never reviewing the PAG Terms of Reference could be a reduced public acceptance of the plan and potential scepticism of the overall process. General understanding of SFM and resulting initiatives may be reduced and future goals identified by Canfor and BC Timber Sales would be more difficult to achieve.

From an analysis of the "what if scenario", it is clear that a balance of values can be achieved with an annual review of the PAG terms of reference. As such, Canfor and BC Timber Sales are committed to reviewing the PAG Terms of Reference at least once a year to facilitate a consensus-based public involvement processes.

Monitoring and Reporting Procedures

As the review of the PAG Terms of Reference is set to be a part of a scheduled PAG meeting, this will be evident in the PAG meeting minutes. Reviews of the PAG Terms of Reference and any identified changes to the document will be obtained from the minutes of the annual PAG meeting. The indicator will be included in the annual SFMP report for the operating year April 1st to March 31st.

PAG meetings will be scheduled a minimum of once a year, with more meetings conducted if required. During these meetings, minutes will be recorded indicating the date of the meeting and the members in attendance, along with the items discussed during the meeting. Meeting minutes will be tracked and filed to ensure that Canfor and BC Timber Sales are meeting the target requirements. The number of meetings will be reported in the SFMP annual report for the operating year of April 1st to March 31st.

Responsibility and Continuous Improvement Opportunities

Canfor and BC Timber Sales will ensure that PAG members will be given adequate notice when the Terms of Reference document will be reviewed. Canfor and BC Timber Sales will continue to maintain the ToR documents, such that any revisions resulting from the annual review of the ToR document will be made and distributed to the PAG members. The strategic planning forester is responsible for ensuring the number of times the Terms of Reference is reviewed is included in the annual SFM Plan report.

The PAG is responsible for establishing the timeline for meetings. The Strategic Planning Forester is responsible for ensuring the number of meetings held during the operating year is included in the annual SFMP report. Canfor and BC Timber Sales will look for ways to maximize the effectiveness of future PAG meetings. One possible improvement may be to explore creating small working groups to work on specific projects and issues.

3.53 Public Sector Participation in the PAG

| Indicator Statement | Target and Variance |
|---|---------------------------------------|
| Percentage of the public sectors as defined in the Terms of Reference invited to participate in the Public Advisory Group (PAG) process | Target: 100% Annually Variance: 0% |

This indicator addresses the following CSA-SFM parameter:

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| <p>1) CSA Criterion: Accepting Society's Responsibility for Sustainable Development CSA Critical Element: Public Participation Local Value: Public participation in decision making processes Local Goal: A clear process for a wide public participation in SFM.</p> |
|--|

Description of Indicator

The TFL30 PAG is comprised of a variety of representatives that have various defined interests, values or specific uses of the forest resource within the DFA. An important component of the PAG is the representation from the various public sectors as defined in the Terms of Reference.

Their involvement in the PAG process is crucial for the success of the SFMP as they represent a broad range of interests, both commercial and non-commercial, within the DFA. They also possess experience and expertise that Canfor and BC Timber Sales can draw on in achieving the SFMP objectives. Their participation will enhance the co-operation between the forest industry and other parties interested in the management of public lands in the DFA to meet the social, economic, and ecological goals of sustainable forest management.

This indicator is designed to evaluate the success in encouraging this co-operation by tracking the percent of the public sectors, as defined in the Terms of Reference, that are invited to participate in the PAG process. The PAG cannot force participation by any organization, but it can provide the opportunity to do so through such invitations.

Current Practices and Status of Indicator

The process for inviting representatives from the defined public sectors to participate in the PAG is defined in the PAG ToR. Of the sectors described in that section, 100% were invited to participate in the PAG as outlined in the Terms of Reference document.

Establishment of Targets and Future Practices

The target was established to reflect the importance Canfor and BC Timber Sales place on the participation of the public sector in the PAG process. Those public sectors eligible for participation as defined in the Terms of Reference will continue to be invited to all future PAG meetings.

Forecasting and Predicted Trends

This indicator is not easy to forecast, as it is dependent on implementation and future improvements of this SFMP. However, it is important to identify what the accepted target means to SFM. The percentage of public sectors, as defined in the Terms of Reference, invited to participate in the PAG process may influence the success of the SFMP. Therefore, the use of a "what if scenario" is beneficial in identifying anticipated future trends for an indicator such as this. As this indicator currently has a target set at 100%, one other scenario should be identified:

- a) What if 50% of the public sectors, as defined in the Terms of Reference, were invited to participate in the PAG progress?

If only half of the eligible public sectors were invited to participate in the PAG progress, the social acceptance of the SFMP may be weakened. Without seeking the input of a diverse range of public sector interests, it may appear that the plan is overly dominated by the forest industry. In the future, a SFMP process which excluded these public sector interests could create gaps in the understanding of local concerns. It may also result in the loss of confidence in the SFM public input process if certain sectors were not included in the process.

Diverse public sector representation provides a different perspective of SFM and assists in updating the plan to reflect a wide variety of views in the DFA. A PAG that has provided an opportunity for public sector participation encourages a wide range of participation in SFM. Due to the importance in providing the opportunity for the

public sectors, as defined in the Terms of Reference, to participate in the PAG process, Canfor and BC Timber Sales are committed to achieving the target of 100%.

Monitoring and Reporting Procedures

The number of invitations made to the public sectors to participate in the PAG process will be compared to the number of public sectors outlined in the Terms of Reference. The indicator percentage will be reported in the annual SFMP report for the operating year of April 1st and March 31st.

Responsibility and Continuous Improvement Opportunities

The Terms of Reference outlines the procedure for establishing the invitation list for participating in the PAG process. The PAG SFMP steering committee is responsible for ensuring this indicator percentage is included in the SFMP annual report. Opportunities for continuous improvement may include expanding the list of public sectors in the ToR, and continuing to encourage First Nation's participation in the SFM process.

3.54 PAG and Interested Parties Satisfaction

| Indicator Statement | Target and Variance |
|---|---|
| PAG overall satisfaction score with the meetings | Target: score of 5 annually Variance: -1 |
| PAG overall satisfaction score with the public participation process | Target: score of 5 annually Variance: - 0.75 |
| Percentage of PAG satisfaction with amount and timing of information presented for decision-making. | Target: 100% annually Variance: -20% |
| Percentage of interested parties satisfied with amount and timing of information presented for decision-making. | Target: 100% every 3 yrs Variance: -40% |

These indicators address the following CSA-SFM parameter:

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| <p>1) CSA Criterion: Accepting Society's Responsibility for Sustainable Development CSA Critical Element: Information for Decision Making Local Value: Useful information for informed decision making Local Goal: Useful and timely information to interested parties.</p> |
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Description of Indicator

The PAG is one of the key elements of public involvement in the SFM process. The TFL30 PAG and interested parties provide guidance, input and evaluation during development of the SFM Plan. They are also instrumental in maintaining links to current local values and forest resource uses within the DFA. In order for the PAG to make decisions in regards to the content of the SFM Plan, such as indicators, targets, and levels of responsibility, they must have the information to support those decisions. This information must be sufficient in amount and quality and delivered in a timely manner for the PAG and interested parties to make sound decisions for the SFMP process. The information should be from varied sources so it is robust. Information provided should also be based on good science and balanced.

It is recognized that the PAG are making decisions for recommendation to Canfor and BC Timber Sales regarding the Defined Goals and Objectives as stated in the Terms of Reference (see Appendix 5). Canfor and BC Timber Sales have the responsibility to review, address, decide whether to act on the decisions by the PAG. Similarly interested parties make decisions regarding the comments or input provided to Canfor and BC Timber sales regarding the public plans on the DFA. It then is up to Canfor and BC Timber sales to review, address, decide whether to act on their input.

This indicator is intended to measure and report the level of satisfaction the PAG has with meeting and the overall participation process and PAG and interested parties have with the amount and timing of information presented for informed decision-making into the SFM plan and other public plans. While it is hoped that there will be high satisfaction with the information, it is also acknowledged that with any group of diverse backgrounds and opinions that it is difficult to achieve unanimous satisfaction in any regard. However, if the SFM Plan is to succeed, the people who are involved in its evolution must have a certain level of satisfaction with the information they are using to direct that development.

Current Practices and Status of Indicator

A survey was provided to the PAG at each of the 11 meetings in 2005/06 in order to determine their level of satisfaction. Upon review of the results and comments of the PAG Satisfaction survey it would appear that the PAG is satisfied with the meetings, facilitator and logistics. Public meeting scores are entered into a spreadsheet and graphed and comments are entered into a word document. A final meeting summary graph with comments is presented to the PAG at the next meeting and any needed continuous improvement suggestions are discussed and captured in the meeting meetings.

The average PAG satisfaction score out of 5 regarding the meeting is 4.5 and overall public participation process is 4.4. PAG satisfaction regarding the amount and timing of information presented for informed input into the SFM Plan during 2005/06 is 89%. No current status information is available for interested parties regarding the amount and timing of information presented for informed input into public plans as this is a going forward indicator.

Canfor has developed a process called "Creating Opportunities for Public Interest" which is framework for communication strategies. This measure will be tracked through this framework of procedures. PAG

satisfaction will be measured annually and the satisfaction of interested parties will be assessed every three years and reported to the PAG through the annual report.

Canfor and BCTS have yet to develop a feedback form for gathering input from interested parties regarding the amount and timing of information provided to help make comments regarding decisions. Starting in April 2007, Canfor and BCTS will have a feedback form ready and will start to gather interested party feedback. This will be reported in the 2007/08 annual report.

Establishment of Targets and Future Practices

The target of 100% satisfaction was established to reflect Canfor's and BC Timber Sales' commitment to providing the best information possible in a timely manner to the PAG and interested parties to aid in their input into plans. The variance is a reflection of the difficulty in achieving full satisfaction in a group with diverse interests.

The PAG participants will complete evaluation forms for each PAG meeting that will survey their opinion on the minutes of previous meetings, agendas, background information, and sources of additional information. The evaluation forms will also survey their level of satisfaction with the timing of this information. An average will be calculated using the summary of the meeting evaluation forms. In the same manner, an average of interested party feedback will be used to generate an average and a document of comments.

An evaluation form will be developed and implemented for assessing public input on amount and timing of information on public plans by August 1, 2006. This will allow for reporting in the next annual report.

Forecasting and Predicted Trends

This indicator is not easy to predict, as it is dependent on diverse human opinion. However, it is important to identify what the accepted target means to SFM. The percentage satisfaction with amount and timing of information presented for informed decision-making may influence the success of the SFMP. Therefore, the use of a "what if scenario" is beneficial in identifying anticipated future trends for an indicator such as this. As this indicator currently has a target set at 100%, one other scenario should be identified:

- a) What if none of the PAG participants were satisfied with the meetings and the overall public process?
- b) What if none of the PAG participants or interested parties were satisfied with the amount and timing of information presented for informed input into public plans?

If members of the PAG are dissatisfied with meeting, the overall participation process, and PAG or interested parties were dissatisfied with the amount and timing of information presented for informed input into plans then the entire SFM Plan process is questionable. The PAG was, and is, responsible for the indicators and targets for the plan. These were determined based on the quality of information presented to the PAG. If this information was deemed inadequate, then the plan and its goals may not be realistic, or achievable. This may result in lower social acceptance of the SFM Plan and less participation in the PAG. These same principles apply to interested parties perceiving that they have been provided with inadequate information for input purposes. They may lose confidence in the SFM process and the public planning process and cease to provide input.

Due to the importance of having well informed, satisfied PAG members and interested parties, Canfor and BC Timber Sales are committed to achieving the target of 100% or scores of 5. It is expected that in the future most, if not all, of the PAG participants and interested parties will be satisfied with the amount and timing of the information presented for decision making. Over time it is anticipated that the variance levels will decrease as greater experience and understanding of the SFM Plan process increases for both the public and Canfor and BC Timber Sales.

Monitoring and Reporting Procedures

The average of the summary of the PAG meeting evaluation forms will be used to determine this indicator percentage. It will be determined annually for all meetings between April 1st to March 31st and reported in the annual SFM Plan report. The same will happen with Interested Party input, however it will not be reported until the 2007/08 annual report.

Responsibility and Continuous Improvement Opportunities

Canfor and BC Timber Sales are responsible for developing the evaluation forms. The Facilitator is responsible for ensuring the forms are completed after each PAG meeting, and to determine the indicator percentage based on the summary of these forms. The Strategic Planning Forester must ensure these percentages are included in the annual SFMP report.

Canfor and BC Timber Sales will look for ways to provide the best information possible to future PAG meetings and interested parties. The dissemination of information could utilize guest speakers, academics, recent scientific literature, and other sources of current knowledge.

3.55 Continuous Improvement Matrix

| Indicator Statement | Target and Variance |
|---|---|
| Review ranking and update status of items on the Continuous Improvement Matrix | Target: 100% annually Variance: 0% |
| Percentage of PAG satisfaction with the progress on the Continuous Improvement Matrix | Target: Score of 5 Variance: -1 |
| Number of items incorporated from the Continuous Improvement Matrix into the SFM plan | Target: ≥ 2 annually Variance: -1 |

These indicators address the following CSA-SFM parameter:

- | |
|--|
| <p>1) CSA Criterion: Accepting Society's Responsibility for Sustainable Development CSA Critical Element: Information for Decision Making Local Value: Useful information for informed decision making Local Goal: Useful and timely information to interested parties.</p> |
|--|

Description of Indicator

The PAG is one of the key elements of public involvement in the SFM process. The TFL30 PAG and interested parties provide guidance, input and evaluation during development of the SFMP. They are also instrumental in maintaining links to current local values and forest resource uses within the DFA. The terms of reference provide for relevant issues to be discussed at PAG meeting. Issues that can not easily be developed into indicators or require more information are placed on a Continuous Improvement Matrix.

This indicator is intended to measure and report the level of satisfaction the PAG with progress on dealing with the issues on the continuous improvement matrix. the amount and timing of information presented for informed decision making. While it is hoped that there will be high satisfaction with the progress, it is also acknowledged that with any group of diverse backgrounds and opinions that it is difficult to achieve unanimous satisfaction in any regard. However, if the SFM Plan is to succeed, the people who are involved in its evolution must have a certain level of satisfaction with the information they are using to direct that development.

Current Practices and Status of Indicator

A continuous improvement matrix was started at the first PAG meeting in October 2005 and has continued for each subsequent meeting. A copy is provided in the Appendix along with the performance indicator matrix.

To date Canfor and BCTS, have yet to develop a workplan for ranking, updating status, or incorporating items into indicators as it was just completed at the April 2006 meeting.

Starting in September 2006, Canfor and BCTS will have a workplan ready to start working on these indicators. Progress will be reported in the 2007/08 annual report.

Establishment of Targets and Future Practices

The target of 100% satisfaction was established to reflect Canfor and BC Timber Sales' commitment to providing continuous improvement and dealing with relevant issues in a timely manner to the PAG.

Forecasting and Predicted Trends

This indicator is not easy to predict, as it is dependent on diverse human opinion. However, it is important to identify what the accepted target means to SFM. The percentage satisfaction with progress on the continuous improvement matrix may influence the success of the SFM Plan. Therefore, the use of a "what if scenario" is beneficial in identifying anticipated future trends for an indicator such as this. As this indicator currently has a target set at 100%, one other scenario should be identified:

- a) What if none of the PAG participants or interested parties were satisfied with the progress on the continuous improvement matrix?

If no members of the PAG or interested parties were satisfied with the progress on the continuous improvement matrix then the entire SFM Plan process is questionable. The PAG was, and is, responsible for the indicators and targets for the plan and the issues on the continuous improvement matrix. These were determined based

on discussions at various PAG meetings. This may result in lower social acceptance of the SFM Plan and less participation in the PAG. These same principles apply to the PAG and interested parties perceiving that they have been provided with inadequate information for decision making purposes. They may lose confidence in the SFM process and cease to provide input.

Due to the importance of having well informed, satisfied PAG members and interested parties, Canfor and BC Timber Sales are committed to achieving the targets. It is expected that in the future most, if not all, of the PAG participants and interested parties will be satisfied with the progress on the continuous improvement matrix. Over time it is anticipated that the variance levels will decrease as greater experience and understanding of the SFMP process increases for both the public and Canfor and BC Timber Sales.

Monitoring and Reporting Procedures

The average of the summary of the PAG meeting evaluation forms will be used to determine this indicator percentage. It will be determined annually for all meetings between April 1st to March 31st and reported in the annual SFMP report. The same will happen with Interested Party input, however it will not be reported until the 2007/08 annual report.

Responsibility and Continuous Improvement Opportunities

Canfor and BC Timber Sales are responsible for developing the evaluation forms. The Facilitator is responsible for ensuring the forms are completed after each PAG meeting, and to determine the indicator percentage based on the summary of these forms. The Strategic Planning Forester must ensure these percentages are included in the annual SFMP report.

4.0 REPORTING

Communicating the results of monitoring is an essential element of the SFM Plan. Various public groups (community organizations, customers, provincial and federal governments) are interested in the progress towards the achievement of SFM. Communicating results to various stakeholder groups will allow for the disclosure of success and failure in forest management. What is important for the latter is a statement regarding the remedial actions that are, or will be taken (managing adaptively) to remedy the situation. This step is important in building confidence in forest management and in resource managers' abilities to manage forests in a sustainable manner. Forest operations will use monitoring information internally to gauge performance in achieving operational objectives. Details from analysis will provide useful information for resource managers in guiding remedial action to correct undesirable forest development. The public will use the results of monitoring to assess Canfor's and BC Timber Sales' commitment to SFM. The reporting out interval will be determined relative to end use and specific to each indicator. Presentation of monitoring information will be summarized and presented in a variety of formats (quantitative: tables, graphs, maps; and qualitative: written descriptions) to ensure clarity of interpretation. The format of the monitoring report will be brief so that decision-makers can easily absorb it and take the next appropriate steps. Where appropriate the report will provide a record of stakeholder input, highlighting areas of agreement and areas in which there is a range of opinion as well as the resulting decisions. A schedule will be developed for reporting on monitoring results and implementing the results of decisions to the stakeholders and the broader public where appropriate.

5.0 LINKAGES TO ADAPTIVE MANAGEMENT

Canfor Forestry Principles state that the company “*will use adaptive management to continually improve forest ecosystem management. This will require the development and implementation of collaborative research and monitoring programs.*”

BC Timber Sales’ Sustainable Resource Management Policy states that the organization will “*monitor, evaluate, and implement appropriate changes to promote continual improvement of environmental and SFM practices*”; and will “*seek to advance knowledge of SFM science and technology and incorporate relevant measures into our overall planning process*”.

An adaptive management (AM) systematic approach will be used to improve management and accommodate change by learning from the outcomes of management interventions on TFL 30. This will be done using the Canfor’s and BC Timber Sales’ Environmental Management Systems. More specifically, the indicators and management objectives derived from the CSA-SFM certification process will be included in the EMS Annual Environmental Programs. Subsequently, the management objectives and targets (where applicable) will be entered into Canfor’s and BC Timber Sales’ EMS incident tracking systems. These database systems automatically inform people that they have been assigned tasks necessary to complete certain actions and will continually send reminders until the action is completed. The progress of meeting the management objectives and targets is reviewed monthly, and the entire EMS is subject to a third-party audit annually.

Outcomes will be evaluated using AM in relation to objectives and policies and adjusted, as appropriate, in response to new information. This section describes the linkages between the scenario planning and the development and implementation of an Adaptive Management (AM) process on TFL 30. The components of AM discussed in this section include:

- a) Determining SMART resource management objectives;
- b) Selecting practical indicators of SFM;
- c) Monitoring indicators of SFM;
- d) Evaluating indicators of SFM; and
- e) Adjusting management objectives based on the evaluation of indicators of SFM

5.1 SMART Resource Management Objectives

Developing meaningful objectives that are consistent with the overarching goal of sustainable forest management is of paramount importance. There needs to be a clear linkage between desired outcomes, procedures for attaining them, measurable attributes and specific points in the future when the objective is to be achieved. Objectives in this plan have been identified using the SMART principle – that is, Succinctly stated, Measurable, Achievable, Relevant, and Timebound.

- 5.1.1 Succinctly stated - Objectives must be succinctly stated in the simplest terms possible without being meaningless.
- 5.1.2 Measurable - Objectives must possess elements that allude to how progress can be measured in achieving the objective.
- 5.1.3 Achievable - Objectives must be reasonably achievable and consistent with need, and are supported by available human and technological resources.
- 5.1.4 Relevant - Objectives must be relevant as far as maintaining the desired public values consistent with the principles of good forest stewardship leading to SFM and achieving corporate objectives that allow the company to remain competitive and healthy in a global marketplace.
- 5.1.5 Timebound - Objectives must be time bound within a finite period during which management strategies are implemented and results obtained in order to assess whether the goal has been achieved or not.

5.2 Selecting Practical Indicators of SFM

Practical indicators play an essential role in facilitating progress toward SFM. Indicators when properly identified, measured, evaluated and assessed relative to operational objectives, allow for an objective, unbiased determination of the progress that is being made towards achieving SFM. Without a means by which progress is evaluated there is little opportunity for learning and adapting new knowledge and understanding how to achieve long term management goals. To ensure new understanding is defensible, indicators must possess

certain functional attributes, but mainly, they must be inextricably linked to operational objectives and be results based. Given the difficulty frequently encountered in comprehending the nature of criteria and indicators, and how they are best used in monitoring SFM, it is important that they are clearly defined.

With respect to Sustainable Forest Management, an indicator is defined as a quantitative or qualitative variable that can be measured or described and which when observed periodically demonstrates trends. SFM indicators are selected to reflect a specific aspect of a condition or state (of a forest), or activity that is to be undertaken to achieve an objective. SFM indicators are selected for measurement, which in turn reflects components of what is implied by sustainable forest management. Indicators are used to monitor actual performance of management strategies against predicted outcomes. Since there is a considerable investment in the process of monitoring, it is crucial that SMART indicators are selected to reflect the outcome of operational objectives. It is important to understand that a single indicator is insufficient to monitor progress toward achieving SFM.

5.3 Monitoring Indicators of SFM

Monitoring is the collection of data for comparison to an explicit standard (target or threshold) or a forecasted outcome for purposes of determining progress toward a specific goal consistent with sustainable forest management. The intent is to determine whether or not the standard or expectation of management is being met. Measuring the indicators in an operational context is critical to ensuring the SFM Plan performance is consistent with projected outcomes. If not, adaptive management strategies may be required. A unique monitoring plan and protocol will be developed for each indicator that details the acquisition of data to compare to an explicit standard. If sampling is necessary, the method selected needs to be statistically based with adequate sampling to address the issue of variation and the required limits of error. The indicators will be periodically checked to ensure they are responsive, adaptive, defensible and publicly acceptable – to provide greater support and stability for industrial operations on TFL 30.

Important considerations in defining the approaches for monitoring: parameter(s) to be measures; complexity of the task; precision required; variability of the conditions; season of measurement; sampling design; data source(s); availability of baseline data; frequency of data collection; and resource support requirements for data collection.

5.4 Evaluating SFM Progress with Indicators

The effectiveness of a monitoring plan is dependent upon earlier decisions with respect to the setting of objectives, the selection of indicators and understanding exactly what information is desired from monitoring and how it will be used. The analytical procedures that are correctly prescribed and executed convert indicator data into information and understanding about response in relation to management. There is always the possibility that incorrect assumptions can be made with respect to the degree to which forecasted values can be achieved. Data analysts and interpreters must use their judgement to objectively determine the relative achievement of objectives and progress towards sustainable forest management.

Important considerations in evaluating SFM progress: who analyzes the data; who interprets the analysis and provides the interpretative report; who provides critical review of the interpretative report.

5.5 Adjusting Management Activities Based on Indicators of SFM

The main objective of monitoring and analysis of data is to determine whether or not management objectives are being met. Given that management objectives are SMART, unacceptable variance (or acceptable target values that have not been achieved) ought to alert resource managers to consider remedial action. However, the decision to respond must be based upon the analysis and assessment of all indicator information and consideration of possible outcomes if nothing is done. The difficulty that forest managers face is determining what component of management needs to be changed to bring the entire system back into alignment with acceptable ecological, social and economic variability. It is understood that the impacts of change management can potentially affect every aspect of the system so decisions must be planned carefully and thoughtfully. Applying adaptive management strategies and incorporating knowledge derived from experience and experimentation will prove invaluable in developing adaptive management approaches toward sustainable forest management. Use of AM approaches will provide deliberately designed to enhance the rate of improvement:

- by providing reliable feedback about which policies, plans, or practices are effective and which are not; and
- by increasing understanding about ecosystem function, and identifying thresholds in ecosystem.