Sustainable Forest Management Plan

Canfor Kootenay Operations

Version 6.0

June 2024

Photo: Erik Bjerstedt

Canadian Forest Products Ltd.

"Sustainable forest management is the balanced, concurrent sustainability of forestry-related ecological, social, and economic values for a defined area over a defined time frame."

Acknowledgements

We wish to thank all members, past and present, of the Public Advisory Group (PAG) for their contributions and dedication to sustainable forest management in the Kootenay Region. Although the PAG is no longer active and has been disbanded, significant changes to this SFM plan have been referred to the appropriate parties for review and comment.

We also gratefully acknowledge the contributions from Indigenous Peoples, ENGO's, and members of the public who provided input into the development of this plan as well as the Annual Reports. Additionally, we would like to thank the Canfor Kootenay Woodlands staff who provided timely and thought-provoking additions to many sections.

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Executive Summary

Since the early 2000's, forest tenure holders ("licensees") operating in the East Kootenay have worked with members of the public, local stakeholders, Indigenous representatives, and Government Agencies to develop and implement a Sustainable Forest Management Plan (SFMP) for the Defined Forest Area (DFA). This SFMP addresses the increased size of the DFA, changes in forest condition, public, stakeholder, and Indigenous Peoples input and local community values.

Public participation, performance objectives, management systems, review of actions, monitoring of effectiveness, and continual improvement are cornerstones to the success of SFM. Through public participation and expert advice, performance objectives were developed for the DFA to reflect local and regional interests. Compliance with existing forest policies, laws and regulations are the baseline requirements of the SFM Plan. This edition of the SFM Plan includes updated references to the applicable laws and regulations, as well as an updated suite of Principles, Criteria, Objectives, Indicators, and Targets that address the current environmental, economic, and social conditions within the DFA. The Forest Stewardship Council (FSC) certification (FSC-STD-CAN-01-2018) and the Sustainable Forest Initiative (SFI) certification (SFI 2022 Forest Management Standard) guide this SFM Plan. This SFMP localizes the implementation and monitoring of the criteria and indicators for both Standards.

The SFMP is a dynamic and evolving document that is to be reviewed and revised on a regular basis (approximately every 5 years). Canfor is committed to the monitoring of the indicators set out in the SFMP. On an annual basis, Canfor prepares an Annual Report in reference to the targets established for the indicators in the SFMP. Annual Reports are made available for review on Canfor's external website and to provide input. This process provides Canfor, the public, and Indigenous Peoples with an opportunity to bring forward new information and to provide input concerning new or changing public, stakeholder, and Indigenous Peoples values and interests that can be incorporated into future updates of the SFMP, both at the DFA and Timber Supply Area (TSA) level.

This SFMP has been written appropriate to the scale and intensity of operations, is available to the public, and is kept current.

Canfor Environmental Policies

Canfor believes in conducting its business in a manner that protects the environment and ensures sustainable forest management. In July of 1999, Canfor formally announced its commitment to seek sustainable forest management certification of all Canfor's forestry operations. This Sustainable Forest Management Plan (SFM Plan) and its implementation is intended to fulfill that commitment for Canfor's Kootenay Operations.

The management of Canfor has set out several commitments that define the vision, policies, and guiding principles for Canfor. These include the Canfor *Environment Policy* and *Sustainable Forest Management Commitments.* These commitments have been used to enable and guide the development of this Sustainable Forest Management Plan. In addition, they also commit to continual improvement of performance through implementing the plan under the principles of adaptive management.

Canfor's *Environmental Policy* and *Sustainable Forest Management Commitments* detail the commitments to Environmental and Sustainable Forest Management for the Canfor Defined Forest Area. These commitments are communicated internally and externally to all interested parties.

To access and read the detailed *Environmental Policy* and *SFM Commitments*, please follow the link to: Canfor Policies.

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1.0 Introduction

1.1 Background to Sustainable Forest Management

Canfor is committed to Sustainable Forest Management (SFM) and has provided and communicated these commitments publicly. The policies linked in the Preamble of this document provide the SFM commitments for Canfor.

Founded on long-term commitments to concurrent, balanced, multi-value sustainability, and continual improvement through adaptive management, the Sustainable Forest Management Plan (SFMP or SFM Plan) uses criteria and indicators (C&I) as guideposts for transparent forest management decisions and actions.

The overall objective of the SFM Plan has been to demonstrate to government and industry managers, area residents, stakeholders, local Indigenous Peoples, and customers of forest resources that it is possible to implement sustainable forest management at the management unit level (i.e. DFA). The successful achievement of SFM is intended to occur through the on-going refinement and development, implementation, and maintenance of this SFM Plan. The SFMP translates the strategic goals to operational reality on the ground. It localizes the implementation and monitoring of the criteria and indicators.

Additionally, third party certification continues to be an important factor in the marketability and competitiveness of forest products. Market campaign pressures have led many forest product customers to develop procurement policies that guide suppliers in terms of acceptable practices. Certification of forest practices assures buyers that the wood products meet the requirements considered critical for SFM.

Many of the larger wood products customers require that a forest company have Sustainable Forestry Initiative (SFI) or Forest Stewardship Council (FSC) third party certification for their woodlands operations. Canfor in the East Kootenay maintains both SFI and FSC certification and this plan assists in the commitment of these two standards.

1.2 Scope of the SFM Plan

The scope of this SFM Plan is operations on all public lands Canfor manages within the East Kootenay.

The FSC certification (FSC-STD-CAN-01-2018) and the SFI certification (SFI 2022 Forest Management Standard) guide the development and implementation of this SFM Plan. Both these standards requires public participation processes, performance measures and target establishment, effectiveness monitoring, and adaptive management.

This SFM Plan has been written appropriate to the scale and intensity of operations, is available to the public, and is kept current. This Plan and supporting documents shall provide the following:

- Management objectives
- Description of forest-based inventories
- Description of tree silvics and silvicultural systems
- Level of allowable harvest and rationale
- Description of harvesting and regeneration systems and techniques
- Growth and yield information
- Maps identifying land tenure and timber operating areas
- Provisions for the protection of fish, wildlife, and other non-timber values
- Provisions for the development and expansion of local socio-economic benefits

1.3 Purpose of an SFM Plan

The purpose of this SFM Plan for the Defined Forest Area (DFA) is to provide a planning document that localizes and operationalizes SFM. It provides the 'on-the-ground' implementation of locally developed indicators through the implementation of the associated management strategies and operational approaches outlined. These indicators address a range of social, ecological, and economic values for the DFA. It is updated periodically through the SFMP Annual Report and wholly revised approximately every 5 years, or as may be necessary to remain consistent and/or compliant with the following:

1. Significant aspects of the applicable forest certification standard
2. Public, stakeholder, and Indigenous Peoples values, interests and/or treaty rights, and
3. Provincial forestry laws, legislation, and/or regulatory requirements.

The management unit (area) covered by this SFM Plan is termed the "Defined Forest Area" (DFA) and is described in the Background to the SFM Plan section. It covers both FSC certified and SFI certified tenures.

The SFMP provides a structure that allows the forest manager to link strategic goals and objectives to tactical strategies that apply to changing values and conditions. It provides the forest manager with a process to implement these strategies, measure the response, and initiate needed changes to practices through adaptive management to continually improve on decisions, practices, and ground level results for a wide range of values.

The SFMP will provide direction and links to government policy and licensee operational/business plans. Some expected outcomes of the SFM Plan include:

- Marketplace recognition
- A foundation for a range of certification approaches
- Providing credible information for requesting unit specific management objectives to improve economic efficiencies
- Engaging Indigenous Peoples in ways that reflect their preferences and readiness
- Rigorous, science-based approaches and information allows government decision makers to accept innovative, cost-effective practices, and corporate managers to implement practices with a minimum of conflict
- Engaging stakeholders efficiently in ways that reflect their interests and capacity
- Improved marketplace acceptance, reduced conflict, increased certainty, and effective information management will reduce costs
- Certification and other marketing benefits
- Providing for testing & implementation of the Kootenay Boundary Land Use Plan
- Providing for continual improvement of forest management practices with input from all stakeholders, both external and internal

2.0 SFM Planning Process

Section 2.0 describes the SFM planning process.

2.1 Plan Development, Implementation, & Maintenance

SFM planning is hierarchical in nature. There are three main levels, each with activities and outcomes that are interrelated and required for continuous improvement. The three levels are strategic, tactical, and operational.

Figure 1 refers to the main steps that occurred at each hierarchical level of the planning process but do not necessarily represent the specific sequence of events. Although many of the individual components and activities flow from one to the next, the process is not entirely linear and some hierarchical planning activities occur at similar times.

A Sustainable Forest Management Plan that meets locally defined performance requirements is the outcome of the **Strategic Level** of planning. The SFMP directs tactical and operational plans and practices within the DFA. The critical step at this planning level was to localize the core set of Values, Objectives, Indicators, Targets, and Strategies. The desired future conditions for indicators were determined through the articulation of targets. Both steps were accomplished through a combination of expert technical and stakeholder input.

In the **Tactical Level** of planning, analysis focused on expected areas of operations over the next 20 years, which is a planning horizon that resource managers are familiar with through previous harvesting planning approaches. At this level of planning, data is analyzed for longer time periods to ensure that practices are still within sustainable thresholds and moving towards the desired future forest condition (i.e., targets).

At the **Operational Level**, site, and treatment, specific planning such as site plans, incorporate the strategies and practices needed to achieve the preferred future state while remaining consistent with legislative and corporate requirements.

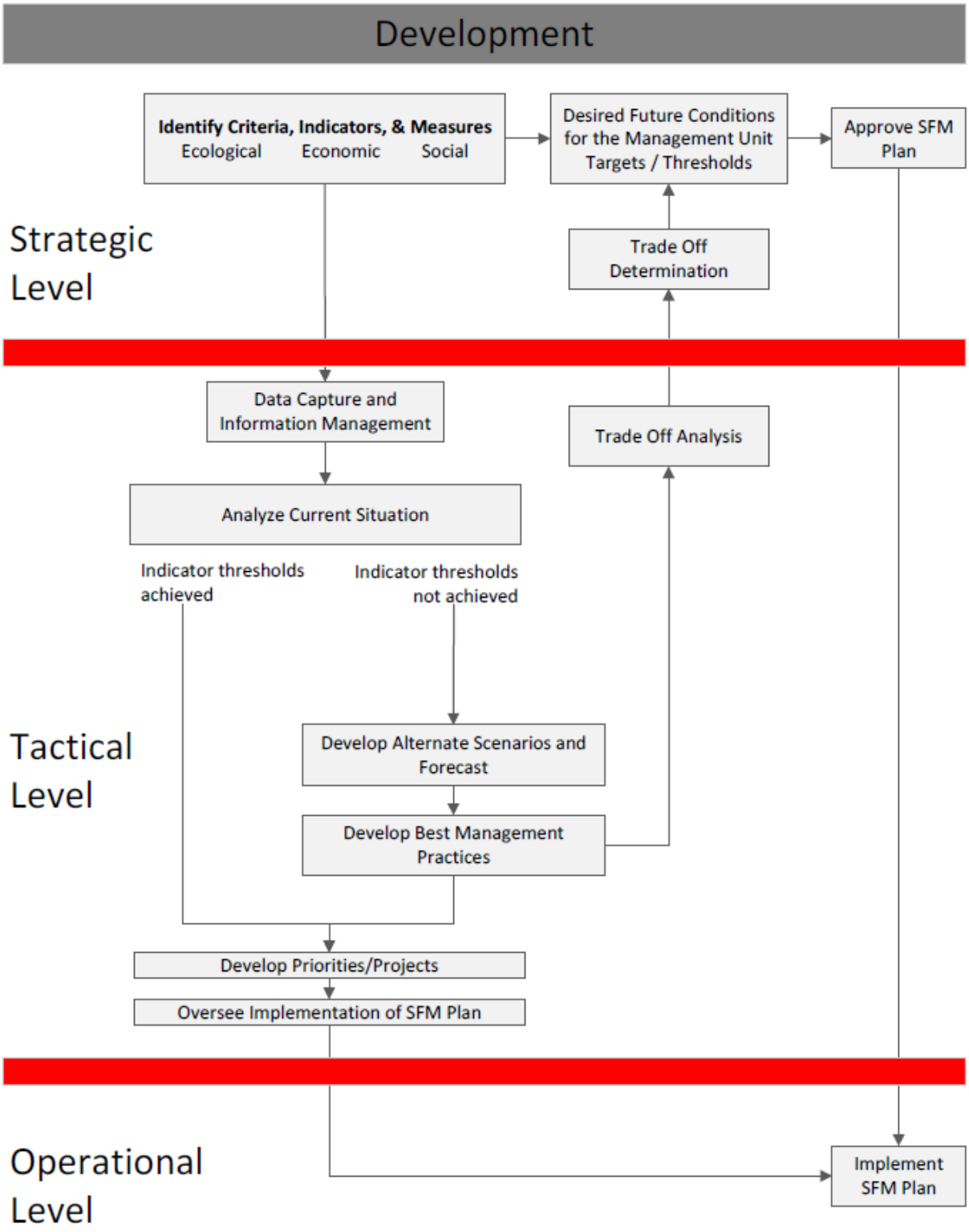


Figure 1. *SFMP Development Flowchart*

SFM Plan Implementation & Maintenance

Once operational level plans are in place, the development phase of the SFM Plan is completed and resource managers begin implementing operational activities and collecting monitoring data according to the plan. As the operational level begins to gather data and assess the impacts of implementing the plan, the tactical level undertakes analysis of the information and the linkage between the levels continues to cycle.

At the **Operational Level**, practices will be implemented consistent with the SFMP and the Forest Stewardship Plan (FSP) through the implementation of current or revised Standard Work Procedures (SWPs). A key task at the operational level is monitoring data collection, analysis, and reporting as part of a scientifically sound, operationally feasible adaptive management plan. Monitoring responsibilities will be clearly defined in the adaptive management components of the strategic and tactical plans and are likely to be shared with others including governments and interest groups. Monitoring information derived at the operational level will be available to the stakeholders which is crucial for maintaining stakeholder support for SFM.

Within the **Tactical Level**, several of the steps identified in the SFM Plan development phase will be repeated in the implementation phase. The following steps, in conjunction with the operational level monitoring, make up a portion of the continual improvement or adaptive management program for the SFM Plan.

- Data capture: monitoring and other new data will be coming into the information management system on a regular basis. This information will have to be captured in a consistent format to be used in analysis and forecasting.
- Analysis and forecasting: as new information comes in, the status of indicators will have to be analyzed and forecast on a periodic basis. The timing of the steps will be contingent on the risk of indicators becoming unsustainable.
- Reporting: if the analysis of the data shows that an indicator is potentially going to become unsustainable, options for actions will have to be explored and a recommendation will be given to the strategic level for decision. Depending on the situation, the public may be involved in determining options and recommendations. The SFMP Annual Report will be publicly available.

The **Strategic Level** completes the continual improvement loop by providing Canfor the opportunity to examine their performance against all the SFM requirements, both individually and collectively, and making appropriate changes if required or recommended. The following steps are completed:

- Review tactical level analysis
- Consider a system internal audit
- Consider appropriate changes to SFM Policy
- Consider appropriate revisions, replacement, or additions to indicators, and/or targets
- Consider appropriate changes to strategies or practices
- Consider appropriate staffing &/or resource levels for SFM implementation

Both the SFM Plan and the SFMP Annual Report are publicly available on the Canfor external website. The intent is that the SFM Plan is updated annually through the SFMP Annual Report and wholly revised every five years. However, on an “as needed basis”, the SFM Plan may require updates that are necessary to facilitate adaptive management at a strategic, tactical, or operational level. These are described in more detail in Section 8.4, Adaptation.

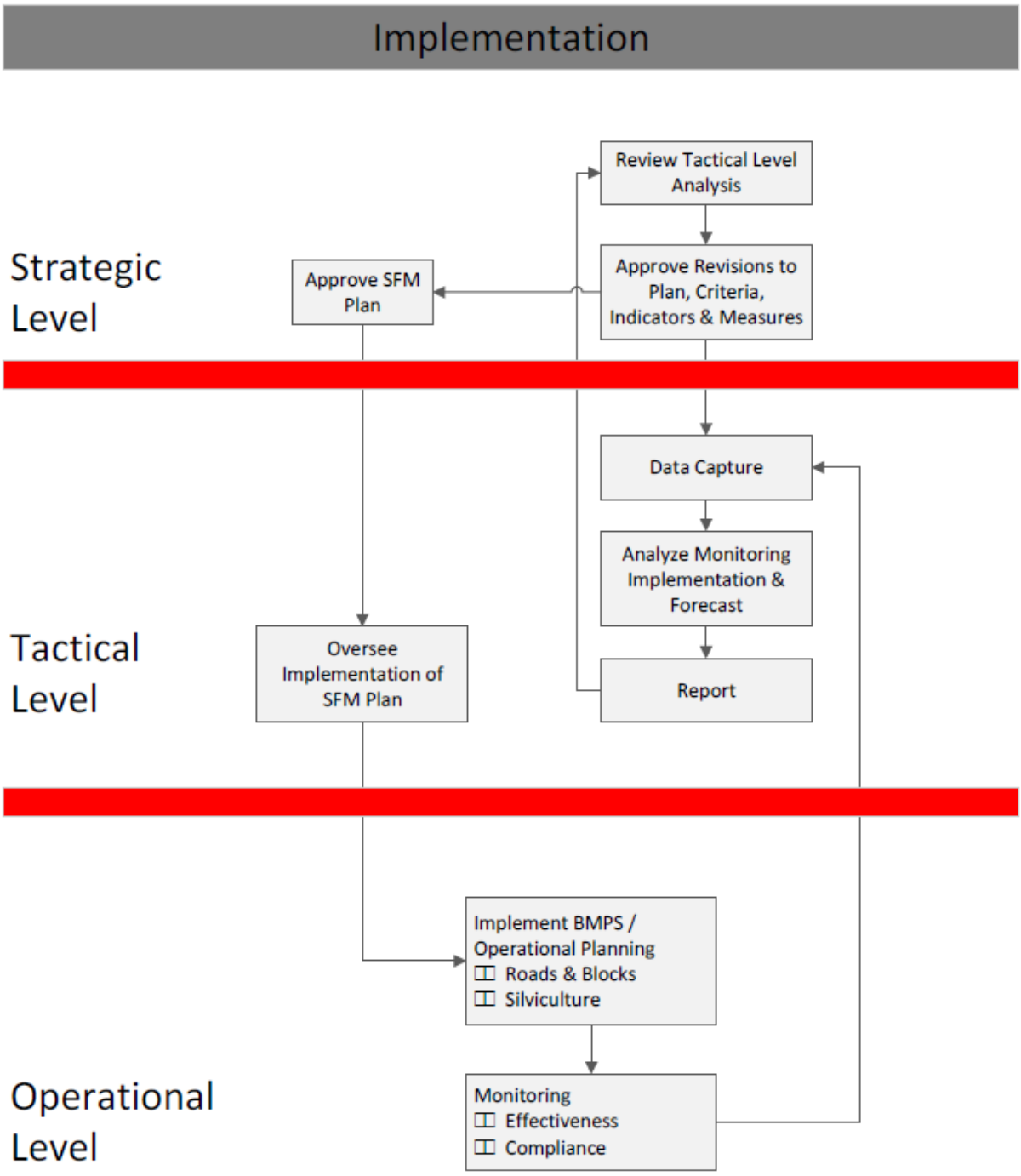


Figure 2. *SFMP Implementation Flowchart*

2.2 Structure and Responsibility

The organizational structure for input into the development and maintenance of the SFMP consists of representatives from Canfor, rights holders, and interested and/or directly affected parties (as described in the rest of Section 2.2).

Participation from Indigenous Peoples, rights holders, and directly affected parties is vital for sustainable forest management. A process for the involvement of those interested and/or affected by forest management is fundamental in exchanging information about the DFA resource management related priorities. This process allows for input, evaluation, and feedback into the SFM Plan. Valuable input is a result of informed, inclusive, and fair consultative processes with local people who are directly affected by, or who have an interest in, resource management in the DFA.

A variety of public participation approaches have been employed on the DFA during the development and implementation of the SFMP.

2.2.1 Canfor Involvement

Canfor is committed to the development, implementation, and maintenance of this SFMP within the DFA.

On publicly owned land, the responsibility and accountability of forest stewardship ultimately rests with the province of BC, however, the signatory to this plan is held responsible for forest management under legislative and contractual agreement through the respective tenure agreements. In light of the development of market driven third party voluntary certification schemes, there is an opportunity for an alternate form of stewardship under SFM. The results of this SFMP will help facilitate that process.

The defined forest area (DFA) includes the collective areas under which Canfor operates in the East Kootenay and has legal rights and responsibilities for those areas. For those parties within or adjacent to the area but are not signatory to this plan, Canfor acknowledges that they have considered and respected their legal rights and responsibilities.

While this SFM Plan is the primary document that will be used to guide implementation of SFM, other existing management systems, operating procedures, and internal policies will also play a role. These components have been considered during the development of this SFMP.

In order to implement the SFMP, it is important that roles and responsibilities are identified. Specific Roles and Responsibilities for each indicator are outlined in the Responsibility Action Matrix (RAM) found in Appendix 3.

Further, the following table outlines the general duties for each of the three main groups for Canfor: Senior Managers, SFM Representatives, and operational staff. These roles and responsibilities are in addition to those identified within the companies Forest Management System (FMS).

Table 1. *Canfor – DFA Roles and Responsibilities*

Canfor Senior Management
▪ Develop, implement, and maintain commitments to SFM (including the SFM Policy) ▪ Assign appropriate level of resources to implement SFM Plan ▪ Define, document, and communicate the roles, responsibilities, and authority to implement and maintain the SFM Plan ▪ Conduct management review of SFM – including the SFM Plan, monitoring results, annual report, internal/external audits ▪ Implement appropriate changes to SFM due to the results of the management review
Canfor SFM Representatives
▪ Coordinate the development, implementation, and maintenance of effective public participation processes including Indigenous Peoples and stakeholders ▪ Respect the roles, responsibilities, rights, and ownership of all parties, both those involved and those not actively involved ▪ Provide meaningful opportunities for directly affected or interested parties to participate in forest management planning ▪ Track internal and external communication concerning SFM ▪ Develop, implement, and maintain the SFM Plan, including participation in the development of local Criteria, Indicators & Targets ▪ Develop/deliver appropriate training for staff to implement and maintain SFM ▪ Develop/deliver appropriate training for contractors to implement and maintain SFM ▪ Develop, implement, and maintain appropriate procedures (operational controls, monitoring, checking, and corrective actions) to ensure effective delivery of the SFM Plan ▪ Develop, implement, and maintain an effective adaptive management process to ensure continual improvement of the SFM Plan
Canfor Operational Staff
▪ Develop operational plans that reflect SFM Plan ▪ Implement operational plans ▪ Implement inspections, monitoring, and corrective actions as per the specific requirements outlined in the respective plans & operational controls ▪ Attend applicable training session to ensure effective implementation of SFM Plan ▪ Knowledge, understanding, and access to SFM Plan and applicable supporting documents ▪ Follow applicable operational controls and procedures to ensure effective delivery of SFM Plan

Details on Canfor's structure, authority, and roles and responsibilities can be found within the Forest Management System (FMS).

2.2.2 Public Involvement

Canfor previously and currently adheres to the legislative review and comment process for stakeholder input. Canfor has developed a thorough and meaningful process with the stakeholders of the local area (i.e., Indigenous Peoples, rights holders, and directly affected parties). The stakeholder involvement process allows for input, evaluation, and feedback into the SFMP and therefore, into SFM for the DFA.

The process includes broad and representative public discussion during the development of the values, objectives, indicators, and targets of sustainability and allows for open dialogue and input to occur based on information being available and understood by all parties. This process will allow stakeholders the meaningful opportunity for on-going influence on decisions, continual input, learning and potential resolution of issues.

Canfor has engaged, and will continue to engage, the participation of directly affected and interested parties in the planning process for the DFA. The Stakeholder Analysis, completed in 2004, was the basis for the public involvement process addressing the public's varied knowledge of SFM and its different level of interests and involvement, as well as differing social, cultural, and economic ties with the forest.

Utilizing results from the Stakeholder Analysis, a balanced and representative mix of persons affected by, or interested in, forest management were invited to be members of a public advisory group (PAG). The first PAG was established in April 2005 and was specific for the Radium DFA. The structure of the PAG was outlined and updated as needed in the PAG Terms of Reference (TOR) and the TOR provided the organizational structure used for the assignment of the duties of team members, advisors, and reviewers. It outlined the basic operating rules for the public involvement process, including dispute resolution (Appendix 6). The TOR also outlined the schedule for the development and maintenance of the SFM Plan, including the involvement schedule and communications.

For privacy reasons, peoples' contact information are not included, however, **Table 2** below provides the interests groups that were historically invited to participate in the PAG. Some of those (people/groups) invited chose not to be involved in the process. The groups that had active representation are indicated by an asterisk (*) in the table below. The groups indicated by (#) began the process but did not continue to attend meetings. These latter groups received information generated from the PAG until it was collectively decided at meeting #10 to stop sending information. They were informed, however, that if they would like to join again or receive information, they could contact the group facilitator.

Table 2. *Interest Groups Invited on the PAG*

Local Government	**Indigenous Communities**
East Kootenay Regional District* Radium Town Council* District of Invermere	Shuswap Band Ktunaxa Nation Council (KNC) including: ?Akisq'nuk Band St. Mary's Band Lower Kootenay Band Tobacco Plains Band
Tenure holders	**Government**
Woodlot* Christmas trees # Commercial Recreation* Trappers* Guide Outfitter* Ranchers# Prospectors	**Provincial (Ministries)** Indigenous Relations and Reconciliation Agriculture Energy and Mines Environment Forests, Lands and Natural Resource Operations BC Timber Sale* **Federal** Parks Canada*
ENGO's	**Interest Groups**
Wildsight* Columbia Basin Trust Nature Trust	Informally structured area groups*
Workers	**Miscellaneous**
IWA Canada #	Tourism*

Silviculture Consultants#	Non-commercial recreation*
Logging Contractor #	Resorts*
Chamber of commerce	

Note: Informally Structured Area Groups – i.e., Spillimacheen Residents &/or Edgewater

This public involvement process contributed to the identification of local values, objectives, indicators, and targets and was an effective process, involving a wide variety of people and interest groups. The process allowed stakeholders the opportunity for continual input and learning, as well as on-going influence on decisions and the potential resolution of issues.

During the 2015 review and revision of this SFM Plan, Canfor took multiple steps to engage Indigenous Peoples, rights holders, and/or interested parties. These steps included:

1. Extensive review and discussion within the PAG.
2. Public posting of the draft SFMP on the Canfor website.
3. Notification letters to Indigenous Peoples, rights holders, and directly affected parties.
4. Meetings with, and presentations to, Indigenous Peoples, rights holders, and directly affected parties both as groups and on an individual basis.
5. Outreach to a random sample of rights holders to solicit feedback on the effectiveness of outreach.

Input into the plan and Canfor's response and, where applicable, any changes made to the plan were documented within the PAG Meeting Minutes and documents.

As of the 2024 SFMP review, the formal Public Advisory Group has been disbanded, however significant changes in content will be referred to the individual PAG members/groups for review and comment.

2.2.3 Indigenous Peoples Involvement

Indigenous Peoples hold a unique position in Canada and as such, have a legally protected right to participate in the development and review of resource management strategies or plans in areas they assert to be traditional territories. This includes Crown lands outside areas where treaties apply. Canfor recognizes all Indigenous Peoples and treaty rights and will facilitate the involvement of Indigenous Peoples in the SFM Plan.

Indigenous Peoples participation is a part of the overall public involvement process as much as possible. The Ktunaxa Nation has traditional areas that overlap the DFA. The initial draft plan was reviewed with the Ktunaxa's Land and Resources Agency (KLRA) in May 2015 and the presentation included an overview of sustainable forest management. The draft was sent to the Ktunaxa in advance of public release. The SFMP notification was sent to all Bands in the KNC, the Shuswap Indian Band (SIB), Neskonlith Indian Band (NIB) and the Adams Lake Band (ALIB) in June of 2014. Follow up meetings were held with the SIB, ALIB and NIB to describe the plan and its contents. Neither the ALIB nor NIB had concerns regarding the content within the plan. The SIB provided no comments following an information sharing session to describe the SFMP's purpose and contents.

The Ktunaxa did not have the capacity to respond or provide meaningful input into the development of the SFM Plan by the July 7th date. They reviewed the plan internally and sent it to a consulting forester for review. Finalization of the SFM plan was postponed, providing additional time for the Ktunaxa to provide comments. KNC provided comments in September 2015. KNC and Canfor further discussed and appropriate comments were accommodated within this final SFMP (2016).

The Indigenous Communities and Councils that have an interest or that are present in the DFA include:

Table 3. *Indigenous Communities and Councils Within the DFA*

Ktunaxa Nation Council (KNC) including: ▪ ?Akisq'nuk First Nation ▪ A'qam Band ▪ Lower Kootenay Indian Band ▪ Tobacco Plains Indian Band	Shuswap Indian Band
	Adams Lake Indian Band
	Neskonlith Indian Band

2.2.4 Other Tenure Holders Involvement

This SFM Plan discusses the intent and actions for Canfor within its respective and collective operating areas. It must be understood that other licensees (i.e., Galloway, BC Timber Sales, Salvage Non-Replaceable Forest Licenses (SNRFL), Forest Licenses (FL)) or tenure holders (i.e., range, commercial tourism, mining, etc.) may conduct harvesting and associated activities on the DFA under authority given to them by the British Columbia government.

Generally, other Licensees are responsible for the construction and maintenance of roads and stream crossings necessary to access their harvest areas approved by the British Columbia government. Other Licensees are responsible for hiring competent and skilled employees and are responsible for the direction, supervision, training, and control of their employees. The performance of other Licensees is subject to the review and inspection of British Columbia government compliance and enforcement officers and must fully comply with the applicable laws and regulations while operating on the DFA.

There are several smaller tenure holders within the DFA. These tenures include Indigenous Peoples forest tenures including replaceable and non-replaceable licenses, replaceable tenures held by other licensees, and licenses focused on mountain pine beetle salvage. The other license holders are responsible for all harvesting, road building, and silviculture activities for their areas. Canfor has signed operating agreements with some Indigenous Bands to co-manage their licenses, some of which fall within the DFA.

Canfor does not have the right to direct or control other Licensees, tenure holders, and/or their respective employees. Additionally, Canfor will not be responsible for other tenure holder activities in the DFA under this SFMP. However, these other tenure holders have been invited to be involved in the SFM process via current stakeholder referrals and First Nations Infoshare. In addition, Canfor will communicate their SFM commitments to all known tenure holders in relationship to this SFM Plan through the appropriate indicators and strategies within this SFM Plan.

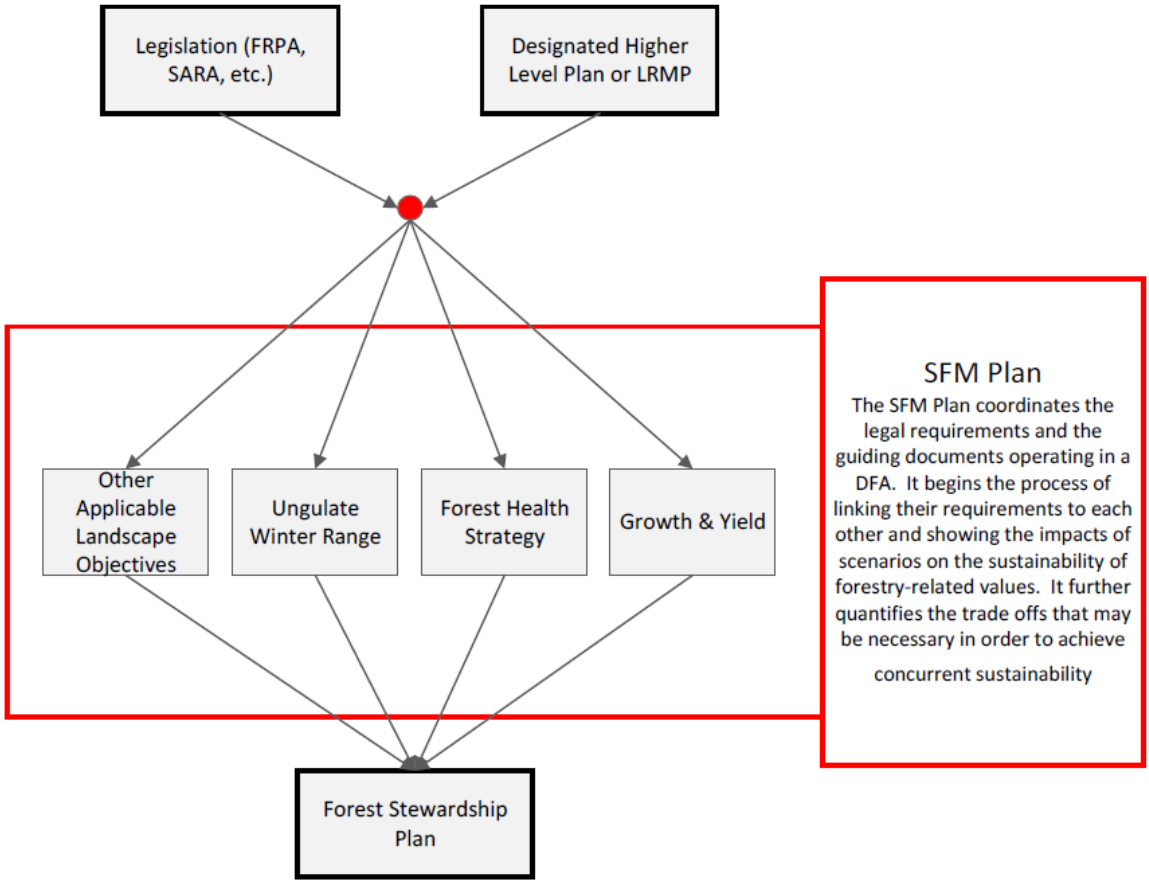
2.3 SFM Plan Links to Other Strategic Initiatives

There are a number of policy, market, and professional forest management drivers that are currently underway in BC. Few of these initiatives have been developed in context of each other or are linked within a larger planning environment, nor do they propose operational tools to address many of the strategic-level forest management approaches. The SFM Plan can assist with the implementation and integration of many of these initiatives and show how the requirements of each can be brought together to gain efficiencies and improve overall management of forest resources.

The SFMP describes the SFM system for the DFA. It is a comprehensive planning document that integrates provincial legislative requirements, as well as many previously implemented forestry or land use initiatives. Applicable legislation and the most influential initiatives are described below, providing a listing and description of the linkages to the SFM Plan. **Table 4** provides information on how the SFM Plan addresses the listed initiative.

2.3.1 Strategic Forest Management Initiatives

Figure 3 depicts the intent and purpose of the SFM Plan in terms of addressing the current range of other decision-making processes relevant to forest management in British Columbia, i.e., legislation, policy, and guidelines.



Source: P. Jeakins, 2004

Figure 3. *SFM Plan Linkage to Strategic Initiatives*

Table 4 contains a list of legislative requirements, strategic policies, and/or initiatives applicable to the DFA. These documents are not appended to the SFM Plan, but were considered during the development, implementation, and maintenance of this SFM Plan.

Table 4. *SFM Plan Links to Other Forest Management Initiatives*

Forest Management or Sustainability Initiative	Linkage to SFM Plan
Forest and Range Practices Act (FRPA)	*FRPA* provides forest managers with a 'results-based' legal structure upon which to develop and deliver forest management. The SFM Plan is also 'results-based'. It provides the signatories the context to develop, implement, and report on achievement of objectives either those set by government or proposed changes to set objectives. At a minimum, the SFM Plan must meet or exceed the requirements of FRPA. However, the documentation for the SFM Plan may provide the rationales for any proposed changes to any objectives identified in FRPA.
Higher Level Plan	Community-based processes (such as the Commission on Resources and Environment (CORE) process in the Kootenay-Boundary Region 1993-1994) for land use planning were completed throughout the province of BC. The resultant plans provide strategic direction and objectives for identified resource management areas. Some of these plans are legislative, while others fall under government policy. The SFM Plan provides further refinement to the setting of strategic direction and implementation, as well as providing a process to encourage and accept change while following the concepts of SFM.
Timber Supply Review for Timber Supply Area (TSR for TSA)	The main objectives of the Timber Supply Review (TSR) are to: 1) Identify the economic, environmental, and social information that reflects the current forest management practice, including their effects on both the short and long-term timber supply 2) Identify where improved information is required for future timber supply forecasts 3) Provide the BC Chief Forester with information to make any necessary adjustments to the allowable annual cuts for the next five years, following the determination.
ISO 14001 Forest Management System (FMS) **ISO 14001:2004** **(Canfor is no longer certified to this standard)**	ISO 14001 provides organizations with the elements of an effective environmental management system (EMS)[1]. This system was developed in a manner that is easily integrated with other management systems. The FMS provides the foundation for the management system of the SFM Plan. The primary linkage between the FMS and SFM Plan will be in the areas of roles & responsibilities, tracking, monitoring, corrective actions, internal/external audits and reporting of performance, as well as regulatory compliance. Although Canfor is no longer certified to this standard, the ISO certification forms the basis of the Environmental Management System which is still in use. Therefore, the requirements are still included within this SFMP.
Forest Stewardship Council (FSC)	The FSC National Standard outlines the requirements for several hundred indicators for the 10 Principles within the 2018 Accredited Version. This SFM Plan is the document that supports the SFM Plan Requirements of Principle 7 – Management Planning.

[1] ISO 14001 EMS of Canfor is called the Forest Management System (FMS)

2.3.2 Strategic Plans, Policies, and Supporting Documents

In addition to the SFM Policies applicable to the DFA, addressing strategic policies/plans developed through other initiatives and legislation is essential for a complete understanding of SFM applicable to the DFA. These external, yet related, documents are categorized into Strategic Plans/Policies (**Table 5**) or Supporting Documents (

Table 6) and are listed below. Some of these requirements are required in order to be compliant with legislative and regulatory requirements established by federal, provincial, or local levels or authority. The following contains a list of all DFA applicable strategic plans and/or policies.

Table 5. *SFM Plan Linkages to Strategic Plans/Policy*

Strategic Plan/Policy	Linkages to SFM Plan
Kootenay Boundary Higher Level Plan (KBHLP) Order **(October 26, 2002)**	The KBHLP Order gives legal status to Landscape Units, Biodiversity Emphasis Options with specific Old and Mature Retention Targets, Connectivity Corridors, Caribou Management Areas, Scenic Corridors, and Enhanced Resource Development Zones. These legally established land-use objectives were considered and complied with in the development of this SFM Plan.
Timber Supply Review – AAC Determination & Supporting Documents: **Invermere TSA (September 2016)** **Cranbrook TSA (September 2016)** **Kootenay Lake TSA (May 2023)**	The AAC determines the timber that is available for harvest in the TSA. It provides the default description of the NHLB and THLB when indicator mapping has not been undertaken. TSR Data Package Submissions and Analysis Report (current) provides the inventory base and analysis rigor to assess SFM within the SFM Plan tactical planning section. All TSR reports are important for SFM Planning given the mandate and scope of TSR. These reports provide DFA specific information for the analysis process. SFM Plans build on the TSR process. As of October 2023, an apportionment decision has been reached regarding the Invermere, Cranbrook, and Kootenay Lake TSA's and has resulted in a reduction in cut level.
Forest Stewardship Plan (FSP) **Canfor Kootenays – November 2023**	FSPs link government objectives to practices on the ground through various results and strategies. Under the *FRPA* legislation, the FSP will be one of the only operational plans that will be submitted to government for approval. The FSP is a landscape level plan that will be the driver of site-specific operational plans, following the requirements of the SFM Plan. It is the responsibility of the individual licensee to ensure that SFM principles are upheld through implementation of this and other operational plans.
Silviculture Strategy (Type I) **Invermere, Cranbrook, and Kootenay Lake TSAs**	The Type I Silviculture Strategies identify the critical issues in timber supply, derive objectives with respect to those issues, specifies regimes to meet those issues, and identifies the regime activities that can be implemented in the next five years. The SFM Plan works to resolve these types of issues.
Provincial Strategic Data – GeoBC **(**GeoBC – Home Page)	GeoBC creates and manages geospatial information and products for all natural resource sector (NRS) agencies. Areas directly tied to SFMP functions include: 1. Standard set of base spatial data (e.g., roads, hydrology, terrain, etc.) 2. Provincial Crown land registries (2) – information repositories of Provincial rights and obligations.

Table 6 below contains a list of supporting documents or systems applicable to all or parts of the DFA.

Table 6. SFM Plan – Supporting Documents/Systems

Supporting Document(s)	Linkages to SFM PLAN
Canfor Forest Stewardship Plan (FSP)[2], 2024	The FSP is a plan that is required under *FRPA*. It provides 'results' and 'strategies' for forest practices – many of which are aligned with the SFM Criteria & Indicators.
Canfor Woodlands FMS	The FMS is an important component describing Canfor's overall standard operating procedures for environmental management and linkages to sustainable forest management.
Historical PAG documents (i.e., TOR, minutes from meetings, etc.). The PAG has since disbanded.	Provides details on the public involvement process in the development and maintenance of the SFMP. This is available at Canfor Radium Woodlands office.
Relationship Protocol and Engagement and Benefits Agreement	Agreements signed between the Ktunaxa Nation Council and Canfor. Outlines each parties' interests and the relationship between them.

2.4 Canfor's SFM Plan – Local Level

The first step in developing the SFM Plan for the DFA was the clearly state management's SFM Commitments. The Commitments[3] provide the foundation and guidance to Canfor.

Following the tenets set out in the SFM Commitments, a number of key activities were undertaken to establish the foundation for a formal planning process. The activities included:

- The management unit was defined – geographically, ecologically, and socially
- Areas adjacent to the unit (i.e., parks, regional service communities) were identified
- Forest managers identified key issues that may affect (or be affected by) the achievement of indicators and that need to be addressed in the SFM Plan
- Forest managers incorporated provincial forest management initiatives (i.e., legislation, policy)
- Indigenous Peoples', stakeholder, and public participation/involvement processes were initiated and maintained
- Available information was collated.
    - Resource inventories for the criteria and indicators identified
    - Current condition for each indicator
    - Report, datasets, and analysis tools from previous planning processes, and
    - Information about new forecasting and analysis tools that may be relevant.

[2] The FSP is a "results-based" plan that is required under the Forest and Range Practices Act. This plan is the cornerstone of the results-based approach governing forest practices under the Act. The FSP must state explicitly how the licensee will address government objectives for key forest values, such as soils and wildlife. The FSP may be in place for up to ten years. A forest tenure holder must meet all the requirements of forestry legislation and regulations, mainly, the Forest and Range

[3] SFM Policies for Canfor are found within the Preamble to this SFM Plan

3.0 Background to the SFM Plan

Section 3.0 provides background information and a description of the Defined Forest Area (DFA) of this SFMP. This section describes the DFA geographically, ecologically, socially, and economically.

3.1 Geographical Description

The Rocky Mountain Forest District is situated in the southeastern corner of British Columbia and was created in 2003 by amalgamating the former Invermere and Cranbrook Forest Districts. The district contains approximately 2.63 million hectares, of which 1.15 million hectares falls within the Invermere TSA and 1.48 million hectares in the Cranbrook TSA. Canfor also has operations in the Kootenay Lake Forest District. The district contains approximately 1.24 million hectares within the Kootenay Lake TSA. Towns located within the Kootenay DFA can be viewed in **Figure 14**.

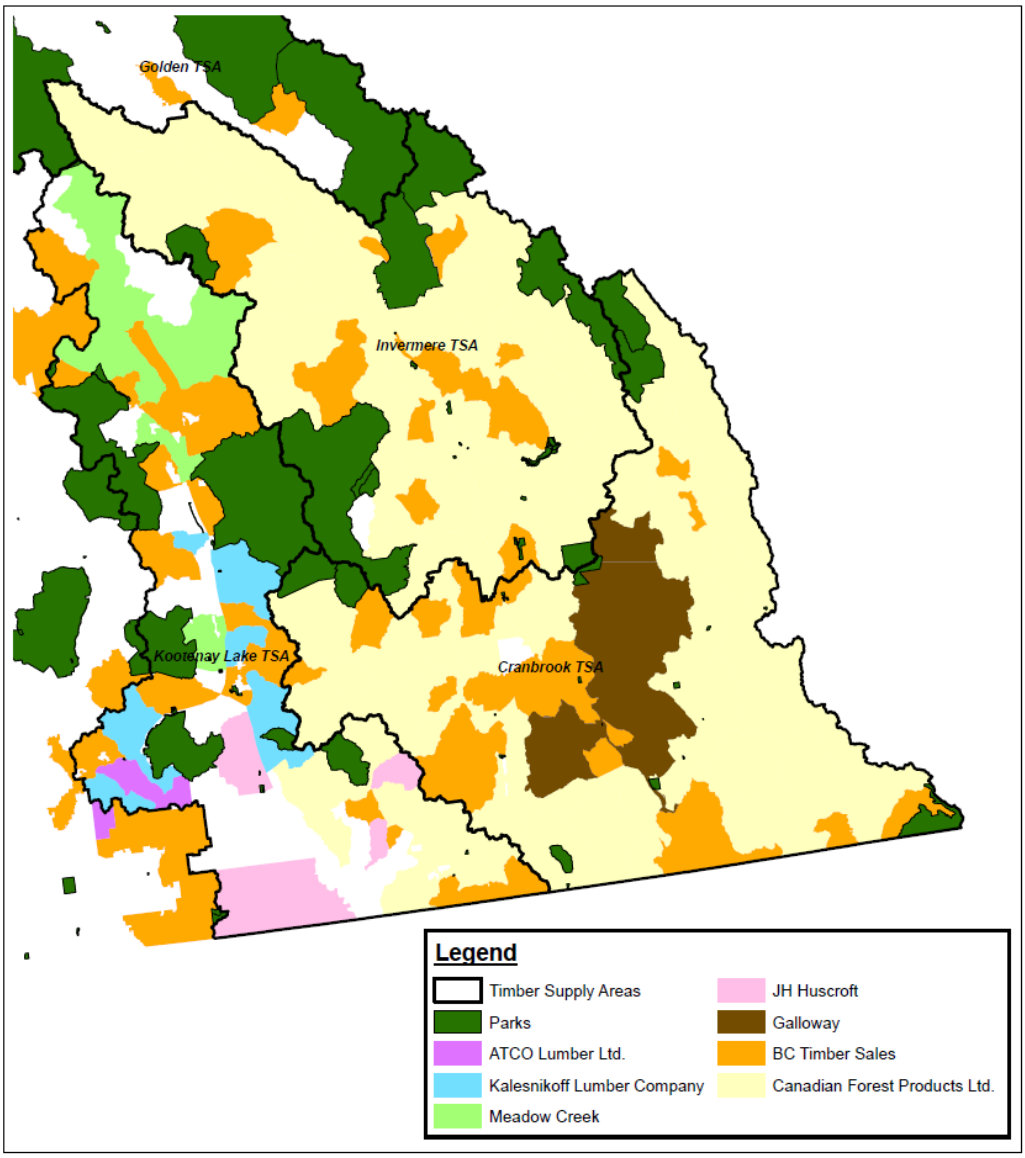


Figure 4. *Canfor – Kootenay Operations Map*

The DFA of this SFM Plan includes Canfor's public land in the BC Ministry of Forests Kootenay Boundary Region – Rocky Mountain Forest District (**Table 7**).

Table 7. *Canfor Forest Management Group Operations*

Forest Management Unit	Forest License	Tenure Type[4]	Certification
Tree Farm License 14	TFL14	Area-based	FSC
Invermere	A18979	Volume-based	SFI
Canal Flats	A18978	Volume-based	FSC
Cranbrook	A19040	Volume-based	FSC
	A94545	Volume-based	FSC
Creston	A20212	Volume-based	FSC
	A94264	Volume-based	FSC
Wynndel	A20214	Volume-based	SFI

Tree Farm License 14 (TFL14)

TFL 14 lies in the northern part of the Rocky Mountain Forest District in the Southern Interior Region of British Columbia (**Figure 5**). This management unit is bounded to the southeast by the Invermere Timber Supply Area (TSA), to the southwest by the Kootenay Lake TSA, and to the north by the Golden TSA.

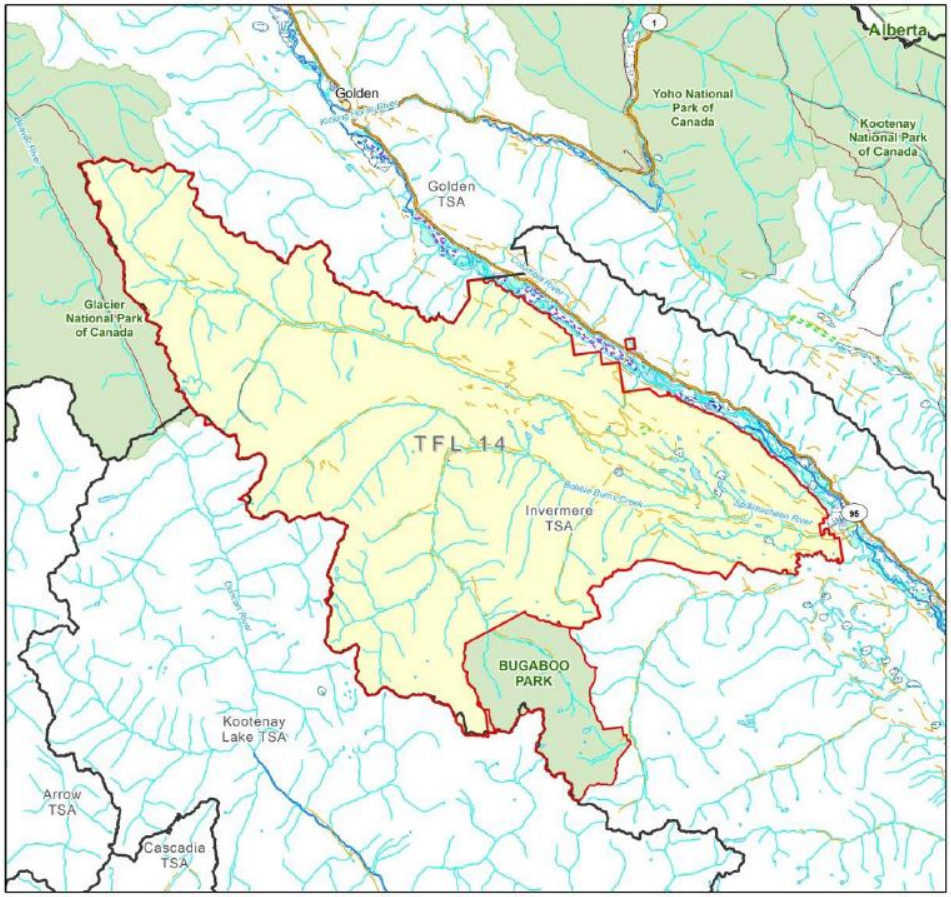


Figure 5. *TFL14 Area Map*

[4] Forest tenure (either area-based or volume-based) is issued by the government of British Columbia. It grants Canfor the right to harvest Crown timber each year, during the term of the Licence, from areas of Crown land within specified boundaries which are specified in cutting permits and road permits.

Table 8 provides a landbase summary of TFL 14. As well, the land base net down summary is provided in **Table 9**. A coarse map illustrating the locations of the CFLB and THLB is shown below (**Figure 6**).

Table 8. *TFL 14 Land Base Summary*

TFL 14 Land Base	Area (ha)
Total Land Base	162,263
Total Productive Landbase – Crown Forested Land Base (CFLB) – approximately 60%	97,133
Non-Productive (non- forest, swamp, alpine area, glaciers, lakes, snowfields, rock, existing roads and trails) – approximately 38%	62,023
Timber Harvesting Land Base (THLB) – approximately 28%	46,064

Source: Tree Farm Licence 14 Management Plan #10 Timber Supply Analysis – Analysis Report (2019)

TFL 14 encompasses four Landscape Units - a landscape unit being the principal unit for long-term planning of resource management activities and biodiversity conservation. The four landscape units are the Twelve Mile Landscape Unit (I38); the Lower Spillimacheen Landscape Unit (I35); the Upper Spillimacheen Landscape Unit (I37); and the Bobbie Burns Landscape Unit (I34).

Table 9. *TFL 14 Land Base Area Netdown Summary*

Classification	Net Area (ha)
Total TFL 14 Gross Area (including Bugaboo Park)	**162,263**
Non-TFL and Private Land	1,250
Non-Productive and Non-Forested	62,023
Existing Roads, Trails, and Landings	1,857
Crown Forested Land Base (CFLB)	**97,133**
Bugaboo Park	4,022
Non-Commercial Cover	1,693
Inoperable and Inaccessible	27,766
Unstable Terrain	1,131
Non-Merchantable	2,443
Low Productivity Sites	260
Riparian Management	6,492
Ungulate Winter Range	616
Avalanche Tracks	257
Old Growth Management Area (OGMA)	4,418
Endangered Forests (EF)	300
Rare and Uncommon Ecosystems	254
Wildlife Tree Patches	1,361
Recreation Sites	56
Timber Harvesting Land Base	**46,064**
Future Roads, Trails, and Landings	500
Future Timber Harvesting Land Base	**45,564**

Source: Tree Farm Licence 14 Management Plan #10 Timber Supply Analysis – Analysis Report (2019)

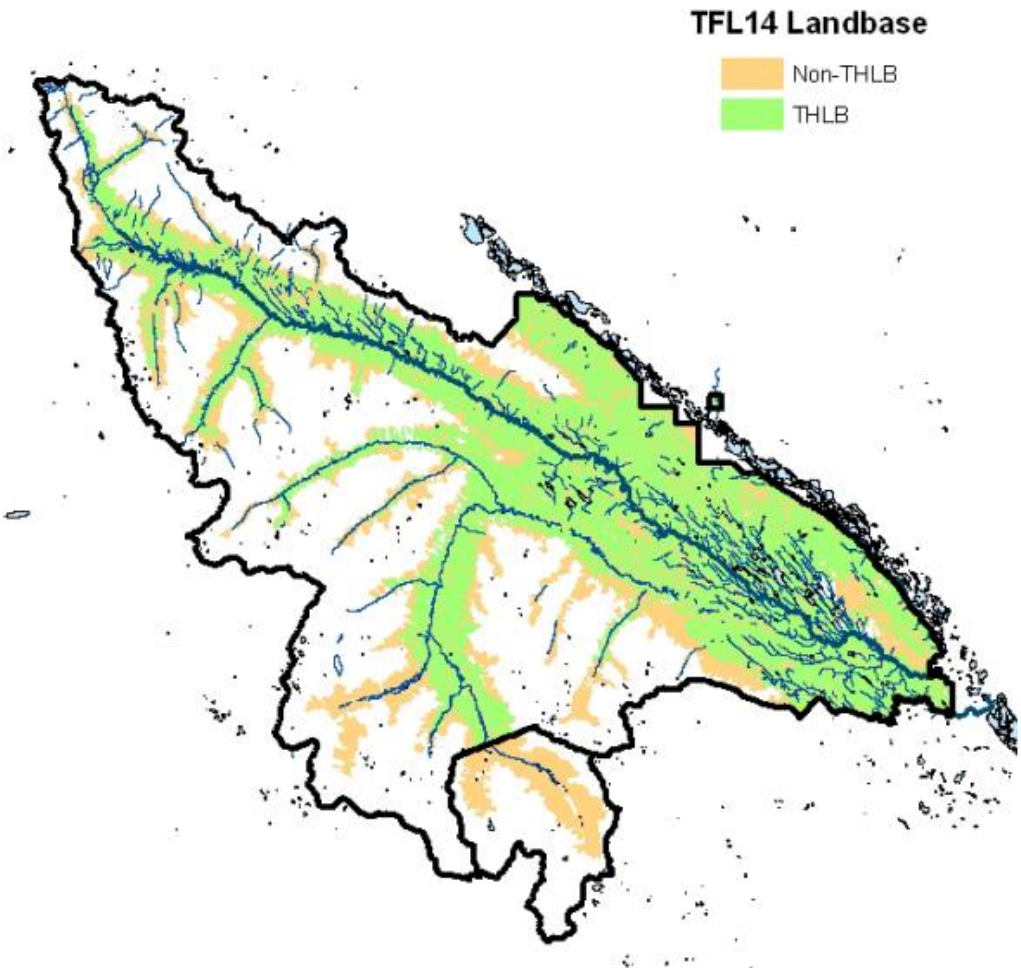


Figure 6. *TFL 14 – Landbase Classification Map*

Invermere TSA

The Invermere TSA (**Figure 7**) is within the Southern Interior Forest Region – Rocky Mountain Forest District and is administered out of the district office in Cranbrook. The Invermere TSA is bounded by the Cranbrook TSA to the south, the Golden TSA and TFL 14 to the north, the Rocky Mountains/Alberta border to the east, and the Purcell Mountains to the west.

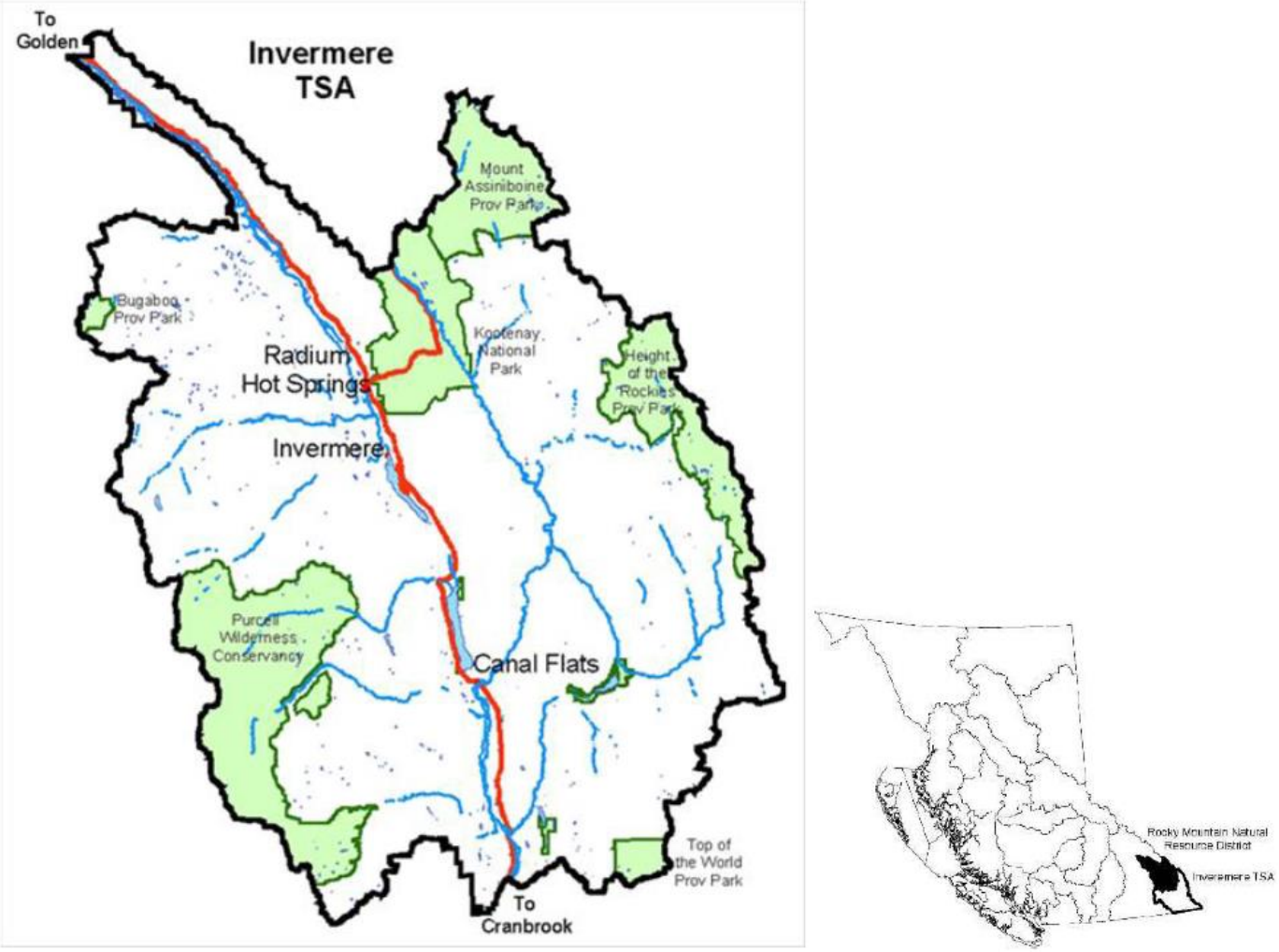


Figure 7. *Invermere Timber Supply Area Map*

Table 10 below provides a landbase summary for the TSA. As well, the land base net down summary is provided in **Table 11**. A coarse map illustrating the locations of the CFLB and THLB is shown below (**Figure 8**).

Table 10. *Invermere TSA Landbase Summary*

Invermere Land Base	Area (ha)
Total Land Base	1,135,602
Crown Ownership	1,062,238
Total Productive Landbase – Crown Forested Land Base (CFLB)[5] – approximately 51%	577,095
Non-Productive[6] &/or not Managed by the Crown[7] – approximately 58%	653,787
Timber Harvesting Land Base (THLB)[8, 9]	195,616

Source: Invermere Timber Supply Area Timber Supply Analysis Discussion Paper (September 2016)

Table 11. *Invermere TSA Land Base Area Netdown Summary* [10]

Land classification	Gross area (hectares)	Net area		
		Area (hectares)	Percent (%) of total	Percent (%) of CFMLB
Total	**1,315,602**			
TFL 14	150,939	150,939	11.47%	
Non-Crown	253,364	253,364	19.26%	
TFL 14				
Non-TSA land	10,894	1,542	0.12%	
Non-productive land	400423	322,602	24.52%	
Existing roads	69,727	10,059	0.76%	
Crown forest management land base(CFMLB)	**577,095**			
Parks	469,734	70,397		12.20%
Non-commercial brush	145	108		0.02%
Old growth management area	66,704	44,348		7.68%
Inoperable	717,104	162,705		28.19%
Steep slope	491,394	48,998		8.49%
Low site	692,900	10,180		1.76%
Wildlife habitat area		1,477		0.26%
Environmental sensitive area	63,166	5,167		0.90%
Unstable terrain	43,584	1,041		0.18%
Riparian area	94,831	16,704		2.89%
Problem forest type	71,114	3,234		0.56%
Non-merchantable stand type	31,919	4,642		0.80%
Wildlife tree patches		12,479		2.16%
Timber harvesting land base (THLB)	**195,616**			0.00%
Future roads		3,629		
Open range conversion		14,810		
Long-term THLB	**177,177**			

[5] The crown forested land base (CFLB) is the area of productive forest under crown ownership. This is the total area of land base that contributes to landscape level objectives for biodiversity and resource management. The crown forested land base excludes non-crown land, woodlots, non-forest and non-productive areas. With respect to percentages and total hectares noted, the CFLB for the Invermere TSA includes Kootenay National Park consistent with TSR4 process

[6] i.e., rock, ice, alpine, etc.

[7] Private, Indigenous Peoples, Woodlots

[8] The timber harvesting land base (THLB) is the portion of the management unit where forest licensees under license to the province of BC are expected to harvest timber. The THLB excludes areas that are inoperable or uneconomic for timber harvesting or are otherwise off-limits to timber harvesting. The THLB is a subset of the crown forested land base.

[9] Within the CFLB, only about 34% is considered economically and biologically available for timber harvesting (17% of the total TSA).

[10] Data Source: Invermere Timber Supply Area Timber Supply Analysis Discussion Paper (September 2016)

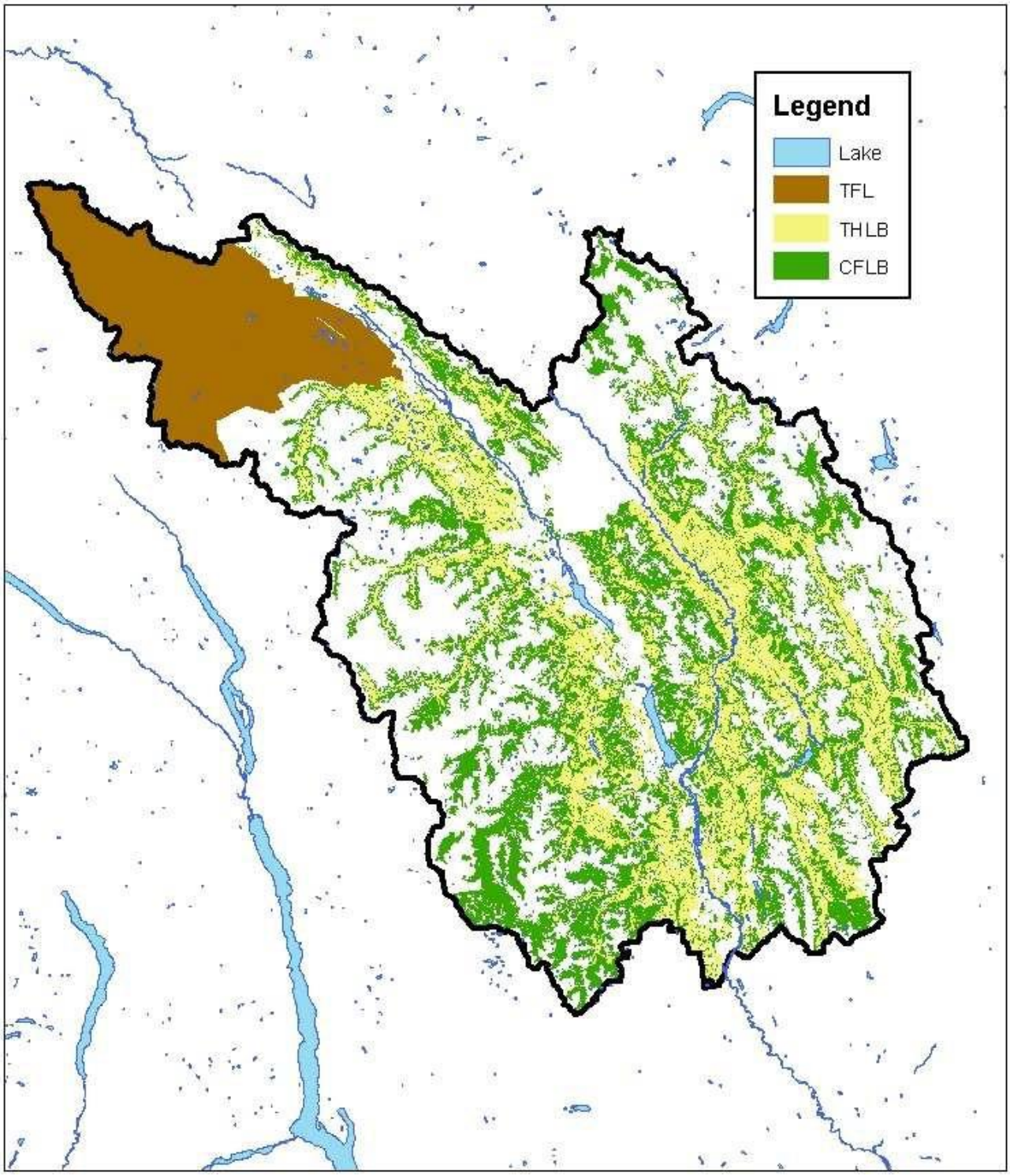


Figure 8. *Invermere TSA – Landbase Classification Map*

Cranbrook TSA

The Cranbrook TSA (**Figure 9**) is within the Southern Interior Forest Region – Rocky Mountain Forest District and is administered out of the district office in Cranbrook. The Cranbrook TSA is bounded by Alberta to the east, the USA to the south, and the Kootenay Lake and Invermere TSA to the west and north, respectively.

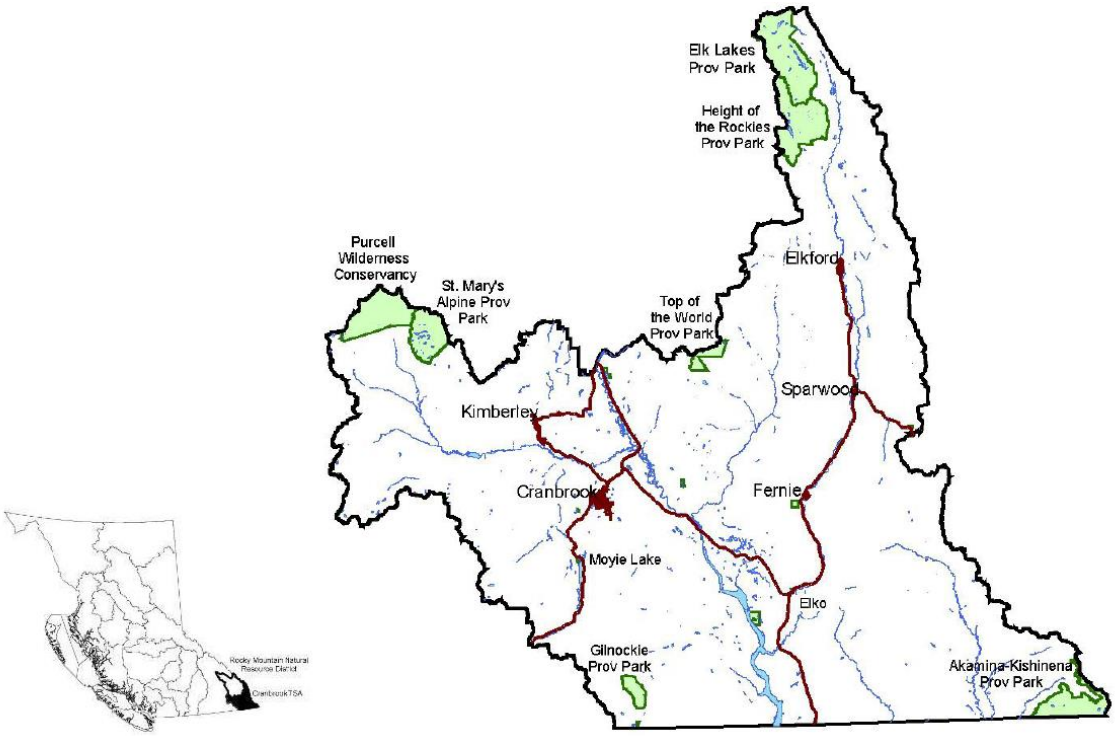


Figure 9. *Cranbrook Timber Supply Area Map*

Table 12 provides a landbase summary of the TSA. As well, the land base net down summary is provided in **Table 13**. A coarse map illustrating the locations of the CFLB and THLB is shown below (**Figure 10**).

Table 12. *Cranbrook TSA Landbase Summary*

Cranbrook Land Base	Area (ha)
Total Land Base	1,484,998
Crown Ownership	1,276,314
Total Productive Landbase – Crown Forested Land Base (CFLB)[11] – approx. 51%	782,474
Non-Productive[12] &/or not Managed by the Crown[13] – approx. 49%	811,828
Timber Harvesting Land Base (THLB)[14, 15]	351,773

[11] The crown forested land base (CFLB) is the area of productive forest under crown ownership. This is the total area of land base that contributes to landscape level objectives for biodiversity and resource management. The crown forested land base excludes non-crown land, woodlots, non-forest and non-productive areas. With respect to percentages and total hectares noted, the CFLB for the Invermere TSA includes Kootenay National Park consistent with TSR4 process

[12] i.e., rock, ice, alpine, etc.

[13] Private, Indigenous Peoples, Woodlots

[14] The timber harvesting land base (THLB) is the portion of the management unit where forest licensees under license to the province of BC are expected to harvest timber. The THLB excludes areas that are inoperable or uneconomic for timber harvesting or are otherwise off-limits to timber harvesting. The THLB is a subset of the crown forested land base.

[15] Within the CFLB, only about 45% is considered available for timber harvesting (24% of the total TSA).

Table 13. *Cranbrook TSA Land Base Area Netdown Summary*[16]

Land classification	Gross area (hectares)	Net area		
		Area (hectares)	Percent (%) of total	Percent (%) of CFMLB
Total	**1,484,998**			
Non-Crown	208,684	208,685	14.05%	
Non-TSA land	29,944	0	0.00%	
Non-productive land	603,144	480,141	32.33%	
Existing roads	27,836	13,698	0.92%	
Crown forest management land base (CFMLB)	**782,474**			
Parks	283,055	20,179		2.58%
Non-commercial brush	4,337	3,611		0.46%
Old growth management area	88,317	84,148		10.75%
Inoperable	777,468	193,891		24.78%
Steep slope	397,143	43,248		5.53%
Low site	671,517	9,180		1.17%
Wildlife habitat area		19,733		2.52%
Environmental sensitive area	116,339	5,268		0.67%
Unstable terrain	11,572	345		0.04%
Riparian area	52,651	10,742		1.37%
Problem forest type	133,970	11,041		1.41%
Non-merchantable stand type	51,857	6,882		0.88%
Wildlife tree patches		22,434		2.87%
Timber harvesting land base (THLB)	351,773			44.96%
Future roads		7,154		
Open range conversion		16,290		
Long-term timber harvesting land base	**328,329**			

[16] Data Source: Cranbrook Timber Supply Area Timber Supply Analysis Discussion Paper (September 2016)

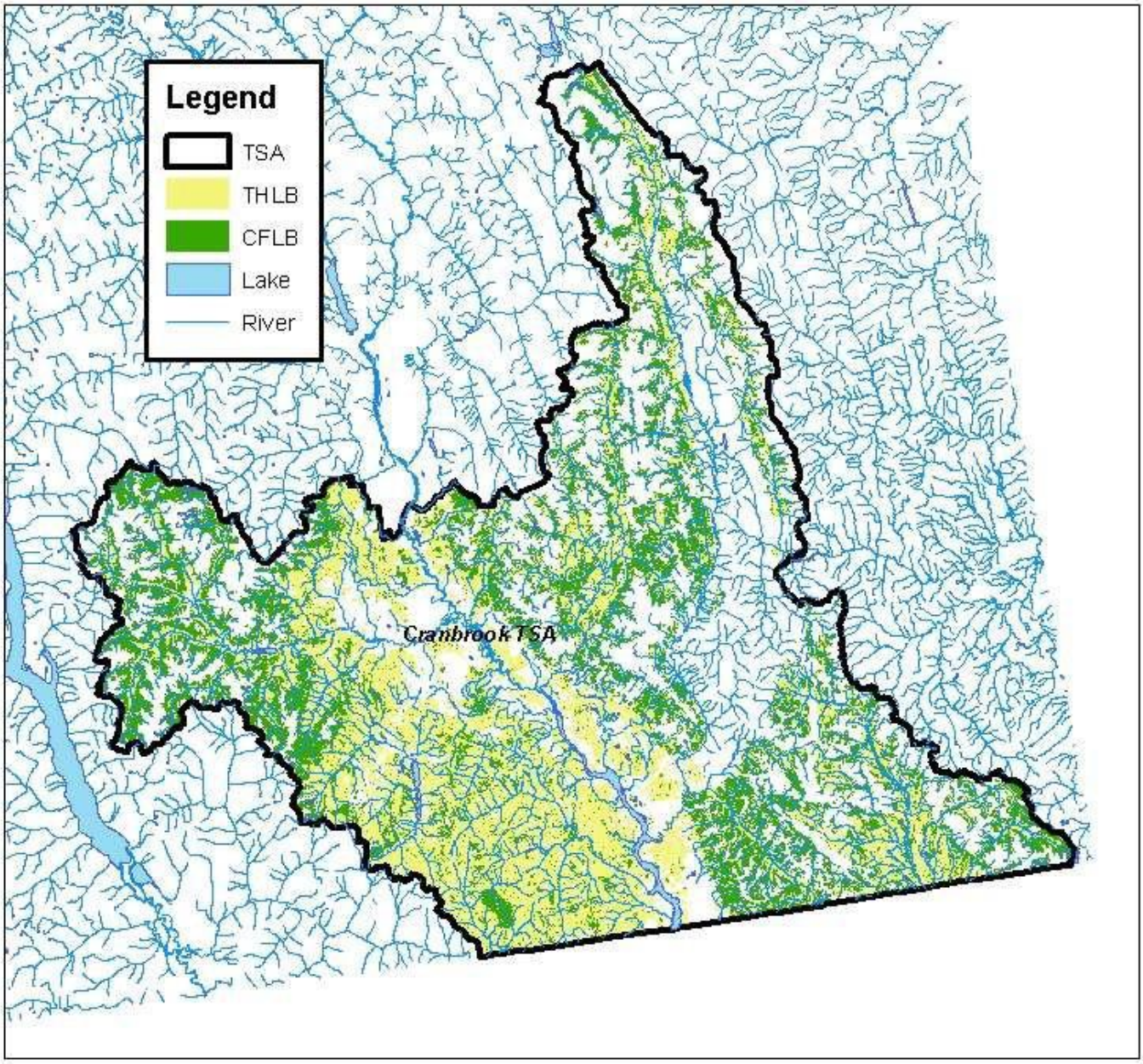


Figure 10. *Cranbrook TSA – Land Base Classification Map*

Kootenay Lake TSA

The Kootenay Lake TSA (**Figure 11**) is within the Southern Interior Forest Region – Kootenay Lake Forest District and is administered out of the district office just east of Nelson. The TSA is centered around Kootenay Lake and runs in a long strip from the U.S. border in the south to Glacier National Park in the north. It is bounded by the Arrow Lake TSA on the west and by the Invermere and Cranbrook TSAs to the east.

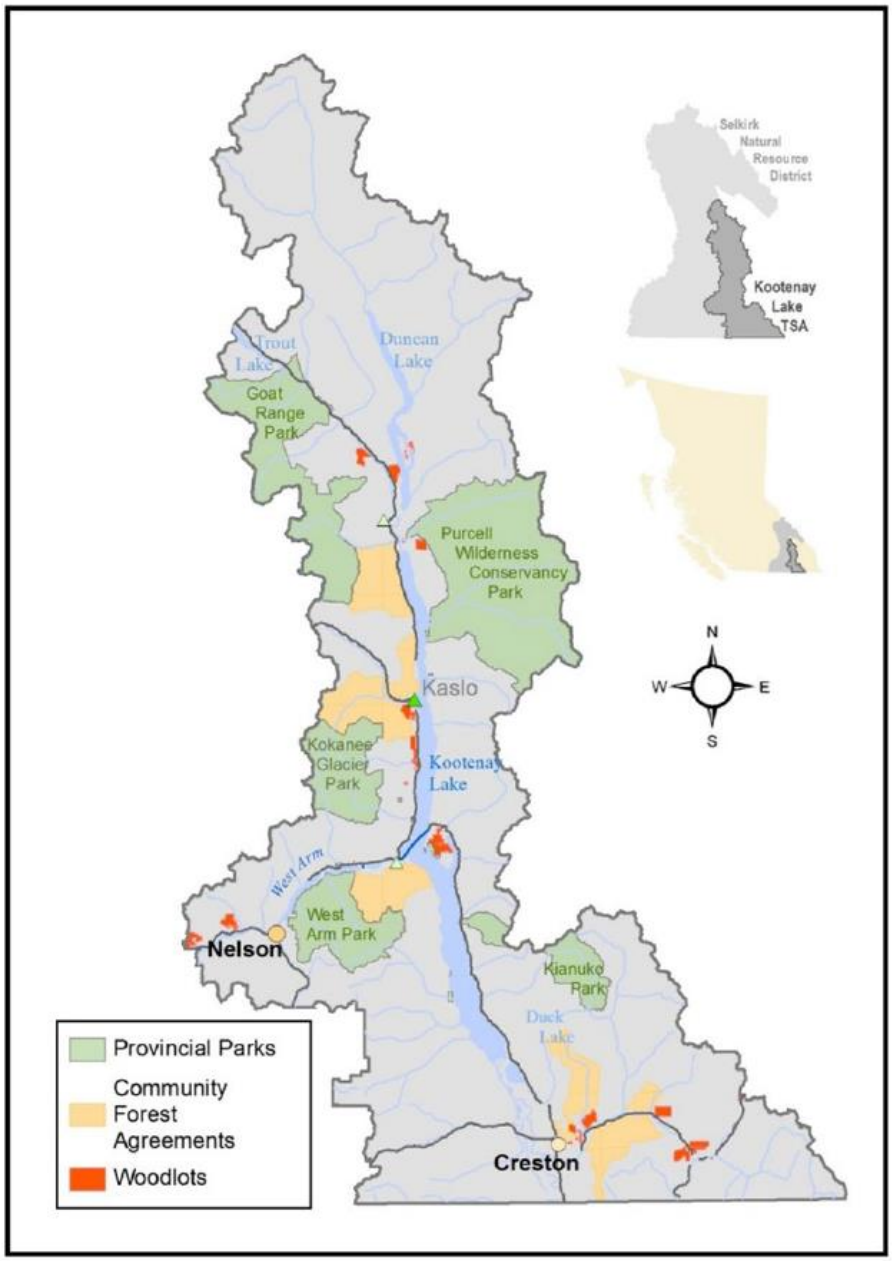


Figure 11. *Kootenay Lake Timber Supply Area Map*

Table 14 provides a landbase summary of the TSA. The land base net down summary is also provided in **Table 15**. A coarse map illustrating the locations of the CFLB and THLB is shown below (**Figure 12**).

Table 14. *Kootenay Lake TSA Land Base Summary*

Kootenay Lake Land Base	Area (ha)
Total Land Base	1,240,878
Total Productive Land Base – Crown Forested Land Base (CFLB) – approximately 54%	675,024
Timber Harvesting Land Base (THLB)[17] – approximately 14%	168,501

Source: Kootenay Lake Timber Supply Area Timber Supply Analysis Discussion Paper (May 2023)

Table 15. *Kootenay Lake TSA Land Base Area Netdown Summary*[18]

Land classification	Gross area	AFLB area	Percentage of gross area	Percentage of AFLB area
TSA boundary	**1 240 878**			
Non-provincial Crown lands	141 667		11	
Not managed within TSA AAC	74 756		6	
Non-forest and non-productive forest	399 067		32	
Existing roads	18 293		2	
Analysis forest management land base	**675 024**	**675 024**	**54**	
Provincial Parks, Reserves, and PAS2 Areas	220 128	123,703	18	18
Caribou no harvest	212 547	134,155	17	20
Old growth management areas	264 791	151,286	21	22
Wildlife management areas	21 749	14,530	2	2
Conservation lands	921	374	<1	<1
Wildlife habitat areas	265	150	<1	<1
Wildlife Habitat - Partial	372	361	<1	<1
High recreation value area	70	46	<1	<1
Riparian	36 407	19,049	3	3
Legally harvestable land base	**352 108**	**352,108**	**28**	**52**
Research installation	153	124	<1	<1
Terrain stability areas	95 661	67,101	8	10
Inoperable	706 550	345,699	57	51
Deciduous leading	19 688	11,282	2	2
Low productivity site	166 685	103,867	13	15
Under-utilized site	606 332	295,015	49	44
THLB isolated small area removal	594	493	<1	<1
Wildlife Tree Retention	9 831	9,528	<1	1
Timber harvesting land base		**168 501**	**14**	**25**

[17] The timber harvesting land base (THLB) is the portion of the management unit where forest licensees under license to the province of BC are expected to harvest timber. The THLB excludes areas that are inoperable or uneconomic for timber harvesting or are otherwise off-limits to timber harvesting. The THLB is a subset of the crown forested land base.

[18] Data Source: Kootenay Lake Timber Supply Area Timber Supply Analysis Discussion Paper (May 2023)

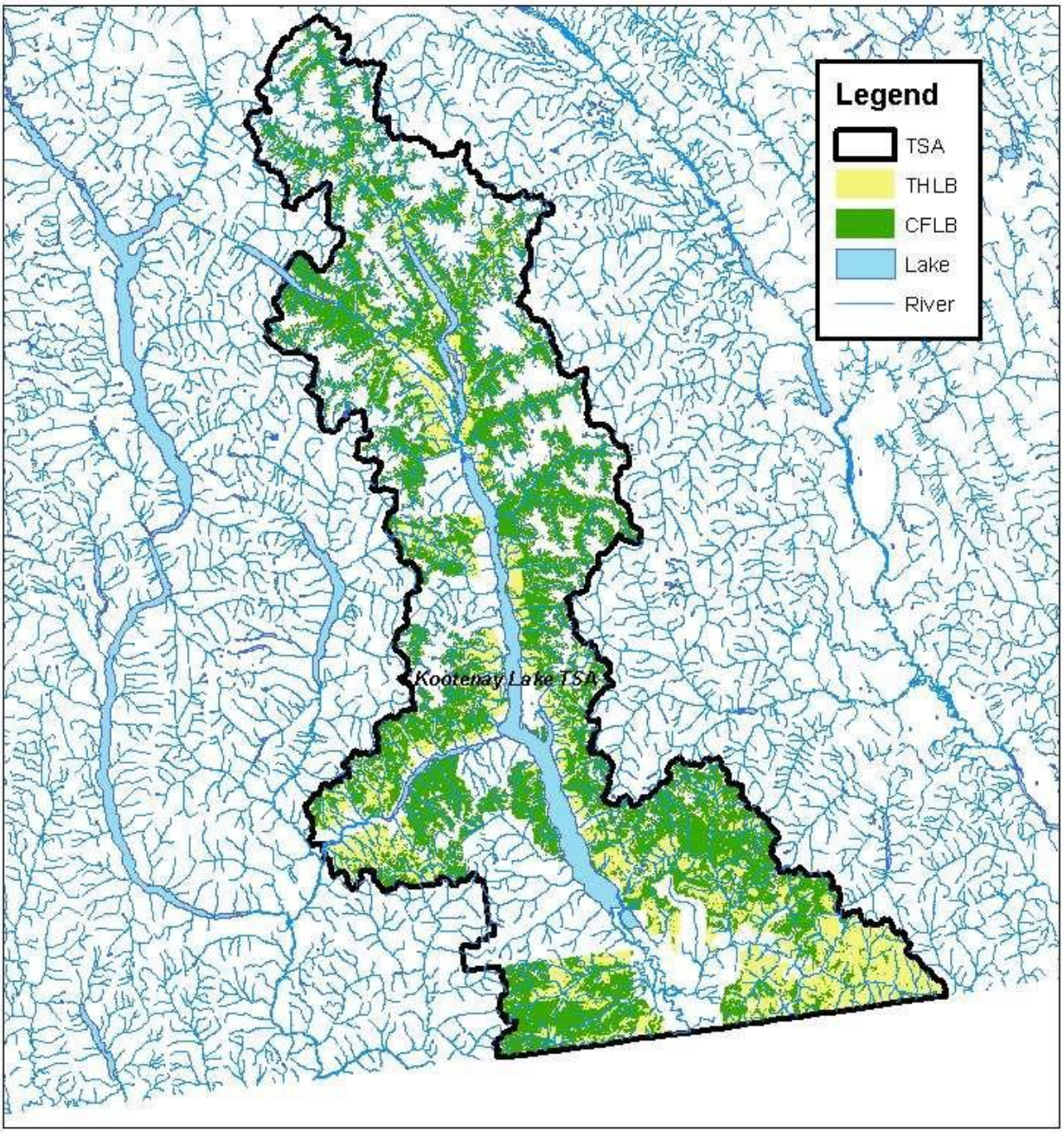


Figure 12. *Kootenay Lake TSA – Land Base Classification*

3.2 Biophysical Description

The DFA includes a wide variety of ecosystems from low elevation grasslands in the valley bottoms to rugged mountains with rocky peaks and alpine areas. Straddling two mountain ranges, the Purcell Mountains to the west and the Rocky Mountains to the east, the DFA is split down the middle by the Rocky Mountain Trench, a broad, flat valley running north-south with two major rivers and numerous wetlands. The Columbia River flows north through the trench from Columbia Lake, creating a large, complex wetland ecosystem called the Columbia Wetlands. The Kootenay River enters the trench just south of Columbia Lake and flows south.

Biogeoclimatic Ecosystem Classification (BEC) and Forest Types

The DFA contains six main biogeoclimatic (BEC) zones (relative area in the DFA – **Figure 13**). These zones reflect differences in terrain, climate and the species of trees that are present. Listed from high to low elevation, these are:

- Alpine Tundra (AT)/Interior Mountain Heather Alpine (IMA)
- Engelmann Spruce-Subalpine Fir (ESSF)
- Montane Spruce (MS)
- Interior Cedar-Hemlock (ICH)
- Interior Douglas-Fir (IDF)
- Ponderosa Pine (PP – now part of the IDF BEC zone with the release of BEC version 12)

Each of these zones is divided further into subzones, indicated with lower case letter codes, and variants, indicated with numbers. Detailed information on British Columbia's biogeoclimatic system and how it works can be found here: BECweb. A detailed description of each of the BEC zones in the DFA, including photos, climate, natural disturbances, tree species, and characteristics of wildfire that occurs within it, can be found in Section 4.3 The Range of Natural Variability.

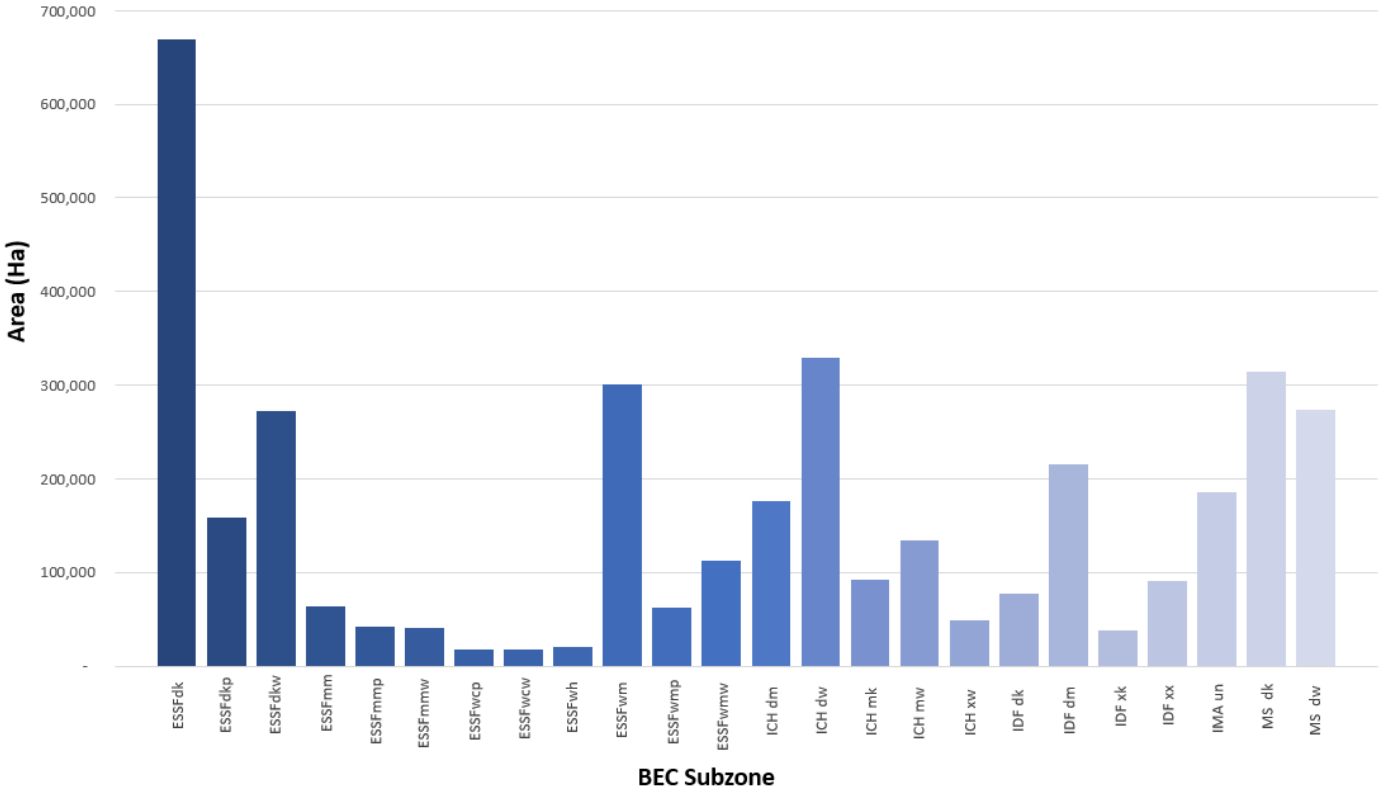


Figure 13. *Relative area of each BEC subzone within the DFA*

Parks

TFL 14 is bordered by three protected areas: Glacier National Park (established 1886) to the northwestern side; the Columbia Wetlands Wildlife Management Area (established 1996) to the eastern side; and the Bugaboo Alpine Recreation Area (established 1969 and expanded in 1994) to the south side.

There are 232,340 hectares of parks and reserves in the Invermere TSA. That area includes one national park (Kootenay) and eleven provincial parks ranging in size from very large to very small; Mount Assiniboine, Height of the Rockies, Top of the World, Purcell Wilderness Conservancy, Bugaboo Glacier, Windermere Lake, Whiteswan Lake, Premier Lake, Canal Flats, James Chabot, and Dry Gulch.

The Cranbrook TSA offers many and varied opportunities for recreation and tourism due to its lakes, parks and spectacular mountains. The area is well travelled, as Highways 3 and 93 are major access routes to Alberta and the national and provincial parks in the Canadian Rockies. Within the Cranbrook TSA, there are the Akamina-Kishinena, Elk Lakes, and Gilnockie Provincial Parks as well as numerous smaller parks and recreation areas and portions of the Purcell Wilderness Conservancy, Height of the Rockies Provincial Park, and Top of the World Provincial Park.

The portion of the Kootenay Lake TSA within and bordering the DFA contains the western half of the *Purcell Wilderness Conservancy.*

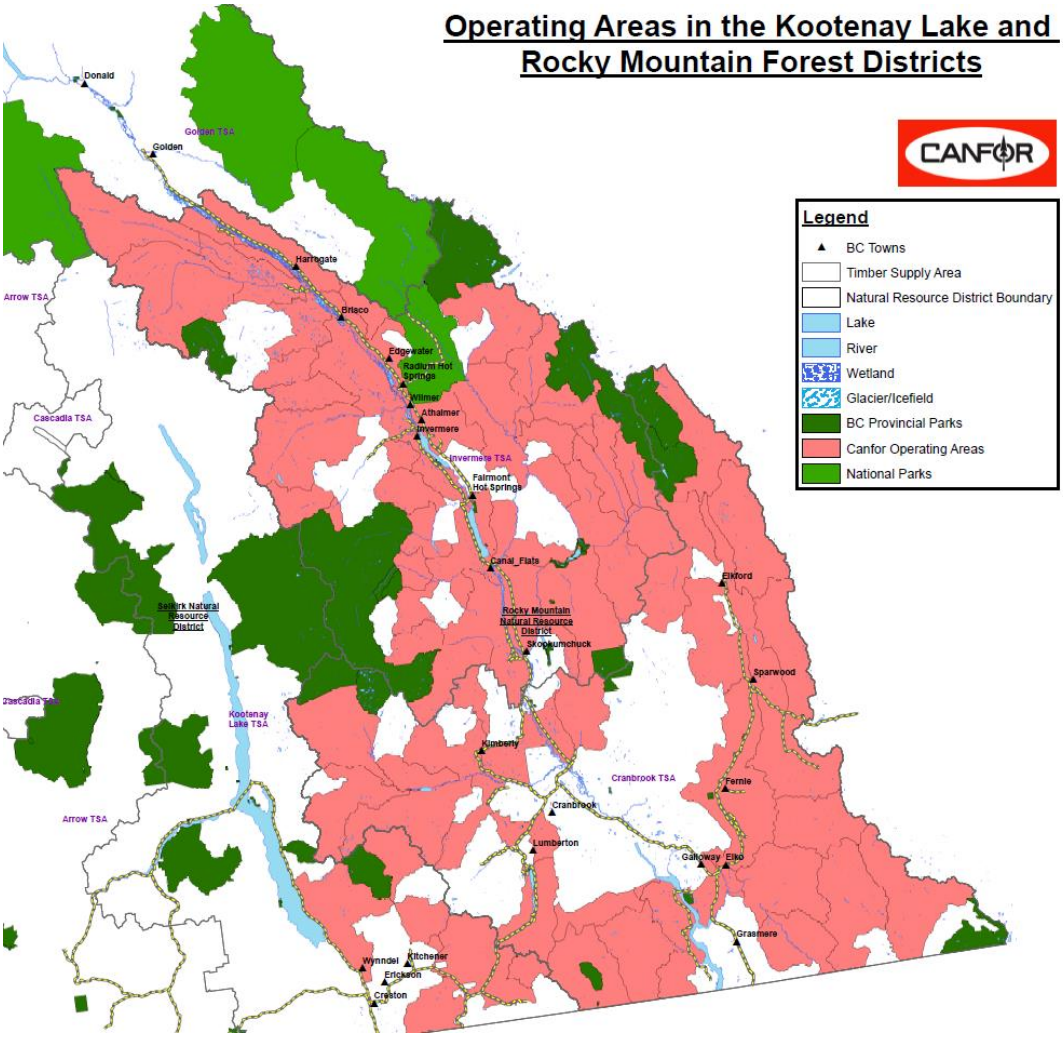


Figure 14. *National and Provincial Parks and Wilderness Areas in and Adjacent to the DFA*

Wildlife and Fish

Canfor's DFA lies in the East Kootenay region which is renowned for its density and diversity of wild ungulate and large predator populations. This wealth of wildlife is made possible by the great variety of habitat types available in the area, including some of the highest ranked ungulate winter range for elk, deer, and bighorn sheep in the province of British Columbia. Ungulate species present in the DFA include elk, mule deer, whitetail deer, moose, Rocky Mountain bighorn sheep, mountain goat, and caribou. Carnivores present include cougar, wolf, coyote, black bear, grizzly bear, otter, fisher, marten, skunk, weasel, badger, wolverine, bobcat, lynx, mink, and fox.

The East Kootenay also supports a high diversity of breeding and migratory bird species. Approximately 174 species of birds are known to breed within the DFA, and many more species migrate through, stopping on the numerous lakes and wetlands, particularly the Columbia Wetlands.

Many species of amphibians, reptiles, and fish species also inhabit the area. The DFA contains many important lakes, creeks and rivers from a sport fishery perspective, and many lakes are stocked.

Finally, there are also diverse communities of terrestrial and aquatic mollusks, butterflies, dragonflies and damselflies, and other invertebrates.

As of June 2024, there were 61 species at risk in the East Kootenay and likely occurring within the DFA (**Table 16**) (not including plants). Species at Risk is defined here as being listed as Endangered, Threatened, or Special Concern by the Canadian government under the *Species at Risk Act* (*SARA*), recommended for listing on SARA by COSEWIC (Committee for the Status of Endangered Wildlife in Canada), or on the Red (Endangered or Threatened) or Blue (Vulnerable) list by the BC Conservation Data Centre.

A full list of the Species at Risk in the Kootenay DFA can be found in the Canfor Master Species Database that is updated annually.

Table 16. *Number of Listed Species in the DFA*

Species Group	Number of Species at Risk
Fish	4
Amphibians and Reptiles	7
Birds	24
Mammals	13
Invertebrates	11
Trees	2
TOTAL	**61**

3.3 Socio-Economic Description

Communities & Populations

The DFA is entirely within the Ktunaxa Nation traditional territory. The Ktunaxa Nation Council (KNC)[19], on behalf of the Ktunaxa Nation, has entered into the BC Treaty process. The traditional territory includes most of the southeast corner of the province.

Figure 15 shows their territory and the BC portion that was filed with the British Columbia Treaty Commission during the Statement of Intent portion of negotiations.

Figure 15. *Traditional Territory of the Ktunaxa Nation*

Archaeological evidence suggests the Ktunaxa have inhabited the East Kootenay region since the last glaciation over 10,000 years ago. The KNC represents the four Band communities of Tobacco Plains (TPIB) near Grasmere, Aq'am (SMIB) near Cranbrook, Lower Kootenay Band (LKIB) near Creston, and ?Akisq'nuk First Nation (AFN – formerly Columbia Lake Indian Band) near Windermere.

[19] Formerly the Ktunaxa Kinbasket Tribal Council (KKTC)

The Shuswap Band (previously represented by KNC) is part of the Secwepemc Nation and has interests within the Invermere TSA. Both the Neskonlith and Adams Lake Indian Bands have asserted traditional territory claims in the northern portion of the Invermere TSA. The Bands are also part of the Secwepemc Nation.

In 1884, reserves for two Bands were established at St. Mary's and Tobacco Plains. In addition, Isidore's Ranch, Indian Reservation 4 was established near Mayook. These continue to exist as Ktunaxa communities with a combined population of approximately 400. Non-status Ktunaxa, as well as other status and non-status Indigenous Peoples such as Cree, Sioux, and Peigan are also residents in the Cranbrook TSA.

Both Traditional Use mapping and Archaeology Overview Assessment mapping have been completed in the DFA and are being used to help protect cultural resources. Culturally important High Conservation Value Areas (CCVFs) were identified in a collaborative process with Ktunaxa Nation members for the entire DFA. In addition, a number of Archaeological Impact Assessments have been completed to identify sites of archaeological significance and develop strategies to protect them.

TFL 14 is the northern portion of the DFA. There are no communities within TFL 14; however, there are several rural communities such as Parson, Harrogate, Spillimacheen, Brisco, and Edgewater that are dispersed along the Highway 95 corridor adjacent to TFL 14. Populations vary from 41 (Spillimacheen) to 369 (Edgewater). The nearest larger population center is Golden (3,780).

The Invermere TSA has a relatively small population of about 8,490[20], dispersed amongst several settlements, such as Canal Flats (736), Radium Hot Springs (766), and Regional District of East Kootenay Areas F and G, and Invermere including Wilmer and Athalmer (2,993). The full-time resident population is augmented by a significant (but unknown number) of part-time residents (mainly from Alberta) at Panorama Mountain Village, Fairmont Hot Springs, Radium Hot Springs, and Lake Windermere. This area is a popular tourist destination, with Invermere's population soaring to 40,000 during the summer.

The Cranbrook TSA is the south portion of the DFA. The City of Cranbrook (19,785) is the regional service center. In addition to Cranbrook, there are four other incorporated municipalities included in this TSA: Kimberley, Fernie, Sparwood, and Elkford. There are some small-unincorporated communities and a number of rural residences that are dispersed throughout the TSA. Cranbrook, plus the surrounding Regional Districts B & C and Indian Reserves results in a population of 26,183[21].

Almost one half of the population of the Kootenay Lake TSA lives in the three largest centers of Nelson, Creston, and Kaslo. The TSA includes many other smaller communities both incorporated and unincorporated. Smaller communities include Yahk, Wyndell, Lardeau, Meadow Creek, and Argenta.

Community Dependence

Forestry, mining, ranching, and tourism form the main basis of employment and economic activity for the small communities. Like many small rural communities dependent on natural resources in BC, communities in the DFA have experienced a significant downturn in economic activity in recent years.

[20] http://www.cbrdi.ca/communities/columbia-valley/invermere-3/

[21] http://www.cbrdi.ca/communities/cranbrook/

The Labour Force in 2011[22] for the East Kootenay included 1,570 people working in natural resources, agriculture, and related production, with an additional 690 in manufacturing and utilities. The Labour Force by Industry in 2014[23] for the East Kootenay included 7,400 in forestry, fishing, mining, quarrying, and oil and gas, with an additional 4,800 in manufacturing. The median hourly wage for forestry, fishing, mining, quarrying, oil & gas was reported as $33.27 and $27 for manufacturing.

The employment base for the DFA, and the mills it supplies, includes people living in the communities of Golden, Parson, Radium, Invermere, Canal Flats, Kimberley, Cranbrook, Creston, Elko, Fernie, and numerous communities in the Columbia Valley. It is recognized that the volume harvested from the DFA provides a significant contribution to employment in the local area.

Forestry employment exists in the form of silviculture activities, harvesting operations, planning, and management, as well as mill-related employment, including a major portion of primary and value-added manufacturing. Considerable indirect forest industry employment is also generated through trucking, machinery repair, and other support services.

Local Business

Tourism, the public sector, forestry, mining, mineral exploration, and ranching operations form the main basis for employment and economic activity for communities within the DFA. Recreation and tourist-orientated business enterprises continue to grow and provide a significant contribution to the economic diversity in the area.

The Columbia Valley is a popular tourist destination, Invermere's population soars to 40,000 during the summer where activities include boating, fishing, hiking, camping, hunting, river rafting, zip lining, and bungee jumping. There are more golf courses per capita in this valley than anywhere else in the Kootenay Rockies. Winter attractions include snowmobiling, snowshoeing, downhill and heli-skiing, and snowboarding. A further attraction to the Columbia Valley includes a relaxing soak in the local mineral pools located to both the north and the south of the District of Invermere.

Cranbrook is a railway town, a mill town, a commercial center, and an island in a sea of golf courses. Cranbrook has the College of the Rockies, an airport, government offices, shopping malls, a modern theatre and a lively arts community, a professional hockey team, and a remarkable museum that captures the experience of the golden age of rail travel in Canada. The opening of the St. Eugene Mission Resort in 2001, the Casino of the Rockies, and the expansion of the Fernie ski resort have seen an expansion of the tourism sector in the southern portion of the DFA.

Businesses in the DFA service visitors' needs, including outdoor recreation facilities, tours and attractions, retail and service businesses, food and beverage facilities, and accommodations.

Economic Profile

Canadian Forest Products Limited (Canfor) is a leading integrated forest products company marketing its products worldwide. Canfor has facilities located in BC, Alberta, and South Carolina, USA and is one of the largest producers of softwood lumber and northern softwood kraft pulp in Canada. Canfor also produces kraft paper, remanufactured lumber products, oriented strand board (OSB), hardboard paneling, and a range of specialized wood products. Canfor's operations have a history of over 67 years of forestry operations that include harvesting, planning, administration, log hauling, road building, silviculture, sawmilling, planning, and pulpmaking operations.

[22] Source: Statistics Canada, National Household Survey 2011

[23] Source: Statistics Canada, Labour Force Survey, Custom Data

In the Kootenay area, Canfor operates dimension lumbermills in Radium Hot Springs[24] and Elko[25]. These mills produce dimension lumber, mainly for the domestic American market, but also make Chinese grade lumber which is approximately 25% of the output. The mill sells residual chips and hog fuel to Paper Excellence's Skookumchuk Pulp mill and sells other sawmill by-products such as sawdust, planer shavings, and hog fuel to other manufactures.

Canfor is one of the largest forest industry employers in the DFA. Canfor has rights to substantial AAC in two of the three TSAs in which it operates. The volume harvested in the DFA provides a significant contribution to employment in the local area. The employment base for the DFA, and the mills it supplies, includes people living in the communities of the DFA.

[24] Canfor acquired the Radium operations from Slocan Forest Products in early 2004.

[25] Canfor acquired TFL 14, Canal Flats, Elko and Cranbrook operations from Tembec in March 2012. Canal Flats mill was shut- down indefinitely – November 2015.

4.0 Establishing the Foundation for SFM Planning

This section provides the foundation for sustainable forest management planning, primarily the collation and assessment of information required as the groundwork for the SFM Plan. This includes the identification and analysis of the inventories and assessments, the key issues, and the range of natural variability that directly influence the management of the DFA.

4.1 Inventory and Assessments

Over the years, the licensees and government agencies in the TSA have completed a number of inventories on the landbase. Inventories include, but are not limited to, forest health, forest cover inventory, rehabilitation, general management, growth and productivity, biodiversity, wildlife, watershed management, and archaeological inventory. These inventories provide a portion of the foundation needed to make management decisions in SFM.

In addition, Canfor has completed several assessments that provide the foundation for SFM. These assessments include, but are not limited to: Ecosystem Representation, Protected Areas, HCVA, Riparian, Patch Size, Stand and Landscape Level Retention, Species of Management Concern (including SAR), Soil, Road Density, etc.

Canfor collates or assembles the required data and assesses the quality and appropriateness of the data, inventory, assessment, or results. Canfor conducts periodic re-analysis of this data as required and updates applicable portions of the management plan.

4.2 Key Issues

Several key forest management issues for the DFA have been identified and collated from legislative requirements (i.e., FRPA), other land use initiatives, processes, and/or stakeholder input. The initiatives and processes from the key issues that have been collected are identified and listed in 2.3.2 Strategic Plans, Policies, and Supporting Documents.

Identification and organization of these key issues is critical for developing and maintaining the SFM Plan. It provides the foundation for setting local criteria and indicators, as well as potentially providing solutions to these issues through strategies. These key forest management issues will be addressed within the SFM Plan through the implementation of strategies and monitoring of indicators.

A listing and scope of the key issues for the DFA, as well as documentation on the significance of this issue to SFM Planning and SFM Strategy, is provided below. This is not a comprehensive list of issues but a summary of the key issues unique to the DFA and is reflected in the issues and concerns identified by the public during a multi-criteria analysis exercise completed in 2005/2006 for the Radium License but included residents within the Invermere TSA. Other key issues may be related to new or changing ecological and/or socio-economic conditions within the DFA or be provided from stakeholder input from within or outside of the local public process.

Table 17. *Key Issues Within the DFA*

Issue	Scope of issue	Significance to Planning	SFM Strategy
Safety	Maintain companywide Operational Health & Safety	Potential to impact wellbeing of workers and community	Forest Management System (FMS)
Mountain Pine Beetle	TSA wide and beyond. Prioritizes harvests. Affects biodiversity	Potential to impact most, if not all, criteria and indicators	Range of Natural Variability Description
HLP Order: Biodiversity & Old Growth Management	Rocky Mountain Forest District as defined by the higher-level plan	Require biodiversity strategy arising from the KBHLPO	Coarse Woody Debris Distribution of Forest Types Ecosystem Representation High Conservation Value Areas Interior Forest Habitat Invasive Plant Species Old and Mature Forest Identification and Recruitment Patch Size Distribution Conservation Gap Analysis Riparian Management The Range of Natural Variability Wildlife Habitat Features Species of Management Concern Wildlife Tree Patch Retention
Fire Maintained Ecosystems	TSA wide and beyond. Affects biodiversity strategies	Potential to impact most, if not all, criteria and indicators	
Identified Wildlife Species			
Loss of Productive Land base	TSA wide and beyond	Potential to impact the size of the productive land base	Detrimental Soil Disturbance Invasive Plant Species Land Conversion Permanent Access Structures Silviculture
Riparian Habitat	TSA wide and beyond. Affects biodiversity strategies	Potential to impact most, if not all, criteria and indicators	Riparian Management Stream Crossing Sedimentation Control
Domestic and Community Watersheds	TSA wide and beyond. Affects biodiversity strategies		Sensitive Watershed Stream Crossing Sedimentation Control
Competing Integrated Resource Values	TSA wide and beyond. Prioritizes harvests. Affects wildlife habitat, visual quality, biological diversity, etc.		In addition to previously listed strategies: Indigenous Peoples Non-Timber Forest Benefits Overlapping Tenures
Economics	Providing economic benefits at a local level		Non-Timber Forest Benefits Overlapping Tenures Procurement of Local Goods & Services

4.3 The Range of Natural Variability

Forested ecosystems experience many types of natural disturbances including wildfire, insect infestations, windthrow, flooding, grazing, and, in some places, volcanic eruptions. These disturbances are highly variable in their timing, location, and severity. For example, wildfires can range from very severe fires in which all the trees are killed throughout entire watersheds, to low intensity fires which kill only the underbrush over a few hectares. Over time, as forests regrow and different disturbances occur and overlap with one another, a mosaic of patches of different ages and structures is created across the landscape.

There is strong evidence that natural disturbances are fundamental to the structure and function of forest ecosystems (Attiwill 1994), and that native species have adapted to disturbance regimes (e.g., Bunnell 1995). Characteristics of ecosystems where natural disturbance has been removed provide evidence of this.

Based on the increasing awareness of the importance of disturbance in ecosystems, the concept of natural variability emerged as a paradigm for ecosystem management in western North America in the 1990's (Morgan et al 1994, Cissel et al. 1994, Swanson et al. 1993). The historic range of variability refers to variability in the composition, structure, and dynamics of ecosystems before European settlement (Swanson et al. 1993). The concept relies on two ideas: that past conditions and processes provide context and guidance for management of ecological systems today, and that disturbance-driven spatial and temporal variability is a vital attribute of nearly all ecological systems (Landres et al. 1999). The natural disturbance approach rests on the premise that native species have persisted through or adapted to the disturbance events of recent millennia (Bunnell 1995, Swanson et al. 1993, Hunter 1993). Thus, the more that managed ecosystems resemble those created through natural disturbance, the greater the likelihood that native species and ecological processes will be maintained (Swanson et al. 1993).

The Range of Natural Variability for BEC Zones in the East Kootenays

Key to implementing the natural disturbance approach is a strong understanding of the natural, or historic, disturbance regimes. Following is a description of the Range of Natural Variability (RNV) for each biogeoclimatic subzone occurring within the DFA. Tables providing a summary of the scientific papers upon which the summaries are based can be found in the appendices of this document.

Canfor's operating area in the East Kootenay Region is comprised of six main biogeoclimatic (BEC) zones. Listed from high to low elevation, these are:

- Alpine Tundra (AT)/Interior Mountain-Heather Alpine (IMA)
- Engelmann Spruce-Subalpine Fir (ESSF)
- Montane Spruce (MS)
- Interior Cedar-Hemlock (ICH)
- Interior Douglas-Fir (IDF)

Each of these zones is divided further into subzones, indicated with lower case letter codes, and variants, indicated with numbers. For example, the ESSFdk1 is the dry cool subzone, variant 1 (Elk), of the ESSF. Detailed information on British Columbia's biogeoclimatic system and how it works can be found on BECweb.

The relative area of each of the BEC variants (version 12.0) found in the DFA is shown in **Figure 16**. The large amount of area in the ESSF, particularly the dry cool subzone, relative to that in the other variants can be clearly seen.

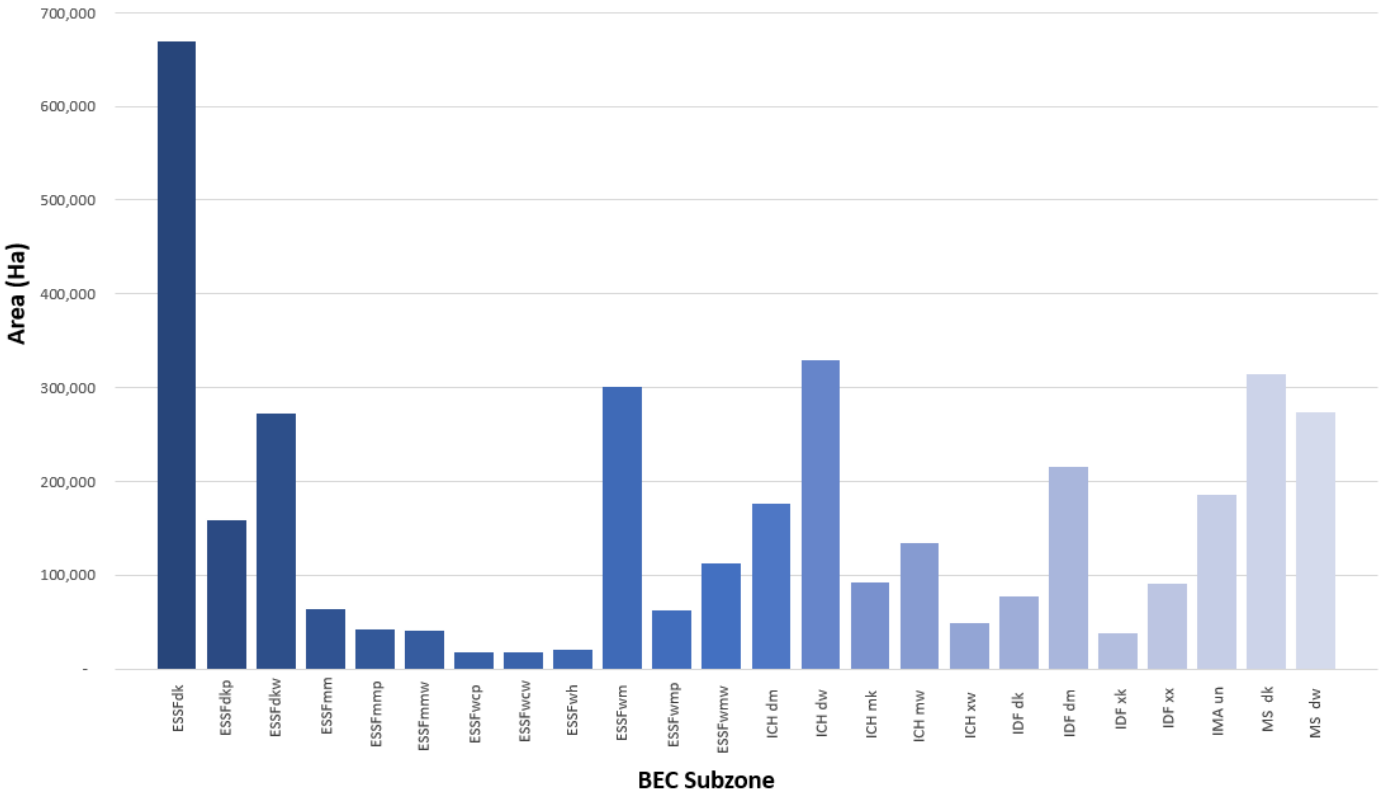


Figure 16. *Relative area of each of the BEC variants in BEC version 12.0 with the Kootenay DFA*

Interior Mountain-Heather Alpine (IMA)

The Interior Mountain-heather Alpine (IMA) zone (previously the Alpine Tundra zone) occurs in high mountain areas, with a lower elevation boundary of around 2100 m, coinciding with the treeline. This zone has an extremely harsh climate, with extensive wind and snow and very short frost-free periods. The interactions of wind, snow and topography result in a mosaic of grasslands, dwarf-shrublands (alpine heaths), and patches of bare soil or rock, with scattered individual trees or islands of trees (krummholtz) occurring in sheltered spots. No timber harvest occurs in this zone.

Natural disturbances include fire, avalanches, rockslides, snow creep, wind and frost damage, defoliating insects (i.e., western hemlock looper and spruce budworm), and grazing from ungulates. White pine blister rust, an introduced fungal disease that affects white pines, also occurs. This disease is one of the key factors linked to the decline of Whitebark Pine over much of its range in North America.

Although extensive work has been done on plant dynamics in the IMA zone, little is known of the spatial and temporal attributes of natural disturbances here, and there are no quantitative estimates of return intervals, patch sizes, or other variables. Fires in the subalpine are thought to be infrequent (100-300 yr.+), severe, and driven by extreme weather events, but it is unclear if this applies to the IMA as well as the subalpine. Tree regeneration after fire appears to be largely unpredictable and only partially correlated with time-since-disturbance or climate; rather, positive interactions among neighbouring plants (facilitation) are thought to be particularly important for successional dynamics. Fire is generally considered to be a positive influence on the persistence of tree species such as Whitebark Pine, as well as the diversity of krummholtz and heath communities.

Engelmann Spruce-Subalpine Fir Zone (ESSF)

The ESSF zone generally occurs above the MS or ICH zones and below the IMA zones, from elevations of roughly 1500-1650 m to 2100 m. The climate is cold and moist with long, cold winters with moderate to heavy snowfall. Engelmann spruce and subalpine fir dominate older stands in this zone, while lodgepole pine dominate young seral stands that establish following high severity wildfire (Campbell and Antos 2003). Whitebark Pine occurs at higher elevations, while Douglas-fir and Western Larch are often found at the lower elevations. Western White Pine and Western Hemlock may also occur at lower elevations within this zone, while broadleaf trees are rare.

Insect disturbances that can affect trees in this zone include bark beetles, two-year-cycle Budworm, and Western Hemlock Looper. Mountain Pine Beetle has impacted both Lodgepole and Whitebark pine in warmer ESSF regions bordering MS, ICH or IDF zones. There are no quantitative estimates on the frequency and severity of insect infestations in the DFA although attacks appear to be cyclic. Gray et al. (2003) report that two-year cycle Spruce Budworm defoliated Subalpine fir and Engelmann spruce along the Kootenay River in alternate years from 1942-1952, from 1964-69 and in 1972, and that populations expanded in the White River drainage in 1972, 1978 and 1979.

Abiotic disturbances in the ESSF subzones in the East Kootenay include wildfire, windthrow, avalanches, rockslides, snow press, and debris flows and flooding in riparian areas. Wildfires are considered to be relatively infrequent and tend to be stand-replacing, since both spruce and subalpine-fir have thin bark making them highly susceptible to mortality from fire (Wong et al. 2003).

Montane Spruce (MS)

Photo: Gerry George

The Montane Spruce dry cool variants (MSdk1, MSdk2) occupy the mid elevation valley bottoms, slopes, and plateaus above the IDF and below the ESSF. The lower elevation boundary varies from approximately 1150 m on north-facing slopes to 1050 m on south-facing slopes or higher on some south facing slopes adjacent to IDF zones in the Rocky Mountain Trench (Gray et al. 2002). The MSdk has a cool continental climate with moderate snowfall. Extensive stands of similar-aged lodgepole pine arising from wildfire are common; other dominant tree species include Douglas-fir, western larch, hybrid white spruce, and subalpine fir.

The main natural disturbances in this subzone are wildfire and bark beetles, primarily mountain pine beetle and spruce bark beetle. These two disturbance types are not independent, but may interact, with beetle epidemics acting as a catalyst to severe stand-replacing wildfire by providing high levels of surface fuel. Recent research supports a mixed-severity fire regime for at least parts of the MSdk subzone (Cochrane 2002, Gray et al. 2002, Gray and Daniels 2005, Daniels et al. 2007, Marcoux et al. 2013), replacing the previously held belief that wildfires were solely severe and stand-replacing in this subzone (Wong et al. 2003). Daniels et al. (2007) suggest that the mean fire return interval be reduced from the Biodiversity Guidebook disturbance interval of 150 years to 45 years and the range of natural variation broadened to be from <5 to 125 years.

Aspect also influences the disturbance regime; dry (south) aspects can exhibit a wider variety of structural attributes independent of age, compared to wet (north) aspects, where stands develop large trees and

snags with increasing age in a relatively predictable manner (Holt 2001). The former supports a strong influence of mixed severity disturbances, while the latter suggests few post-establishment disturbances.

Other abiotic disturbances include windthrow, avalanche and snow press. Riparian areas may experience flooding and debris flows, in particular in the alluvial and semi-alluvial reaches of valley bottoms. In some areas, avalanche run-out zones intersect the MSdk, and provide important spring forage for ungulates and bears. Biotic disturbances include other spruce budworm, fungal pathogens, and dwarf mistletoes (which cause diffuse mortality). There is less ungulate winter range in the MS zone compared to the IDF and PP, and as a result, grazing is a less influential disturbance agent.

Information on historical disturbance regimes for insect infestations is lacking. Data on the frequency and extent of mountain pine beetle outbreaks and other insect pathogens are available in the form of annual overview flight maps but have not been analyzed for the MS. Analysis has been done for some timber supply areas in BC, which report periods between outbreak peaks ranging from 13-60 years, and individual epidemics extending over 6-8 years (Wood and Unger 1996, in Wong et al. 2003).

Interior Cedar Hemlock (ICH)

Photo: Kori Vernier

The Interior Cedar Hemlock zone is found below the ESSF zone at low to middle elevations (approximately 800-1500 m). It is somewhat wetter than the MS zone and has a greater diversity of tree species. Dominant tree species include Douglas-fir, western larch, hybrid white spruce, lodgepole pine, western red cedar, and subalpine fir. Aspen and birch are present, and cottonwood may be found in riparian areas.

Disturbance regimes in the ICH are considered complex, and probably included low severity wildfires, mixed severity wildfires, and stand-replacing wildfires that overlap through time. Other abiotic disturbances include windthrow, snowpress, and hydraulic disturbances in riparian areas in the form of flooding and debris flows. Root rot is also an influential disturbance, and helps to maintain a patchy, dynamic seral mixture of broadleaf species and conifers. In addition, bark beetles (mountain pine, Douglas-fir, spruce), defoliators (western spruce budworm, western hemlock looper), needle diseases, and dwarf mistletoe are important biotic disturbances.

Interior Douglas-Fir (IDF)

Photo: Ashleigh Harvison

Within the DFA, the dominant IDF variant is the dry mild Kootenay variant (IDFdm2). The IDFdm2 variant occurs primarily in the Rocky Mountain Trench, from 800 – 1200 m, although fingers extend up some of the larger valleys (e.g., Findlay Creek and upper Kootenay River). The climate is continental with a long, warm, and dry growing season, and limited snowfall in winter. Dominant tree species are Douglas-fir, western larch and ponderosa pine, but lodgepole pine also occurs on some sites. Aspen and birch are present, along with black cottonwood in riparian areas. Topography strongly influences local moisture regimes and the spread of disturbances, leading to structurally complex forest landscapes of multi-aged patches with ill-defined stand boundaries.

Wildfires are an influential disturbance agent in this zone. Historically, the IDFdm2 was characterized by low and mixed severity fire regimes (Baker et al. 2007, Heyerdahl et al. 2007, 2012), with frequent underburns occurring in drier portions of the IDF zone. Low-severity fires maintained open stands of larger diameter Douglas-fir, western larch, and ponderosa pine trees, interspersed with pockets of higher density, smaller diameter stems. Infrequent, high-severity fires occasionally kill overstory (tall, old) trees, and result in regeneration of even-aged stands (Heyerdahl et al. 2012).

Fire boundaries in the East Kootenay IDF are difficult to determine and consequently, no studies are available on patch size, distribution of fire remnants, or retained trees. Estimates for the IDF in other parts of BC reported fires ranging from ~3 ha to <400 ha (Wong et al. 2003, Heyerdahl et al. 2001, Lertzman et al. 2001), with topography constraining fire size.

Insect defoliators (e.g., western spruce budworm, Douglas-fir tussock moth), bark beetles, and root rot (Armillaria, laminated) are other important disturbance agents. There has been limited analysis on the size and distribution of insect epidemics, although data are collected by government ministries. Over different periods of time it's possible that the area affected by these disturbance agents can exceed that disturbed by wildfire (Parminter 1998). There are no studies on spruce budworm from the DFA, but Campbell et al. (2006) looked at their dynamics from 1700 – 2000 in the IDF area near Kamloops and identified 30, 43, and 70-year cycles, with outbreaks coinciding with early spring seasons characterized by low precipitation levels during winter months and normal spring condition.

Grazing on grasses and shrubs by native ungulates (elk, deer, bighorn sheep) can be severe as the majority of ungulate winter range is found in this zone. Localized impacts occur on grasses and shrubs in riparian areas, particularly around wetlands in the trench where cattle graze. 'Homesteader elk' that remain on winter ranges year-round are having heavy impacts on some ranges (e.g., Skookumchuck Prairie).

Other biotic disturbances include dwarf mistletoe, stem rusts and needle casts. Abiotic disturbances include drought, and minor, occasional windthrow; as trees are well anchored by deep roots and fine textured soils that when dry, are firm and compact. Riparian areas may experience flooding, debris flows and bank undercutting.

5.0 Strategic Level

The strategic level for SFM establishes broad management objectives or sustainability criteria over as large an area as possible over a long time frame (from 100 to 300 years). At this level, the overall strategy for the DFA is defined.

The Canadian Council of Forest Ministers (CCFM) Criteria and Indicators (C&I) and the Forest Stewardship Council FSC-BC Standards guided the development of the SFM Criteria and Indicators that were used as a starting point for the original SFM Plan (2004). This SFMP (2016) aligns with 2018 FSC Forest Management standards, Canfor core indicators, and the 2022 SFI Forest Management standards.

The establishment of Criteria, Indicators and Targets is undertaken at the strategic level. They can be used both to gauge the sustainability of strategic alternatives and assess broad trade-offs. Elicitation and consideration of stakeholder and public views on the indicators and targets, and the priorities amongst them, are an important component of this level. The information and strategies developed at the strategic level are used to guide the tactical and operational level activities.

5.1 Criteria, Objectives, Indicators, and Targets

Criteria and Indicators form the basis of a framework that assesses progress toward achieving the goal of sustainable forest management.

Criteria are meant to be broad management statements describing a desired state or condition. Criteria are validated through the repeated, long-term measurement of associated indicators. They are a means of determining if the Principles of FSC have been met.

Objectives describe the desired future condition, given an identified value.

Indicators are measures to assess progress toward an objective. Indicators are intended to provide a practical, cost-effective, and scientifically sound basis for monitoring and assessing implementation of the SFMP.

Targets are specific short-term (one or two year) commitments to achieve identified indicators. Targets provide a clear specific statement of expected results, usually stated as some level of achievement of the associated indicator.

Strategy is a coordinated set of actions designed to meet established targets.

A summary listing of the SFMP ecological, social, and economic indicators can be found in **Table 18** below.

Table 18. *Kootenay DFA Indicators for Ecological, Social, and Economic Values*

Indicators	
1. Ecosystem Representation	2. Conservation Areas Network
3. Patch Size Distribution by Natural Disturbance Type	4. Distribution of Forest Types
5. Old and Mature Forest Retention	6. The Range of Natural Variability
7. Interior Forest Habitat	8. Wildlife Tree Patch Retention
9. Riparian Management	10. Species of Management Concern
11. Tree Seed	12. Natural Regeneration
13. Mix of Species Planted	14. Wildlife Habitat Features
15. High Conservation Value Areas	16. Cultural Sites and Values
17. Reforestation Success	18. Invasive Species
19. Permanent Access Structures	20. Volume Harvested vs. Volume Allocated
21. Detrimental Soil Disturbance	22. Coarse Woody Debris
23. Watersheds	24. Operational Sedimentation Control
25. Climate Change Adaptation	26. Land Conversion
27. Identified Non-Timber Forest Benefits	28. Overlapping Tenures
29. Local Procurement of Goods	30. Corporate Sponsorships, Donations, and Scholarships
31. Environmental and Safety Training	32. Educational Opportunities
33. SFMP Monitoring Report	34. Third Party Verification
35. Certified Safety Program	36. Indigenous Peoples Awareness Training
37. Indigenous Peoples Understanding of the Plans	38. Level of Indigenous Peoples Participation in the Forest Economy
39. Disposal of Waste Materials	

5.2 Indicators

Each of the 39 indicators found in this SFMP links back to one or more of the following coarse scale criteria. A brief description of each criterion can be found below.

Criterion 1: Biological Diversity

The overall intent of Criterion 1 is to maintain productive, well-distributed populations of species, both known and unknown, within a defined management area. The indicators that apply to this Criterion are based on a multi-filter approach to sustaining biological richness in forested landscapes. For example, the Ecological Representation and Conservation Area Network indicators are 'coarse-filter' approaches to maintaining even poorly understood species and ecosystem functions, by ensuring that all distinct habitat types are represented in some form of reserves on the landscape. Indicators such as Old Growth and Riparian Management are considered components of a 'medium-filter' approach, based on the principle of managing forest and landscape structures that are both important as habitat and are impacted by forestry practices. 'Fine-filter' approach indicators manages for specific species whose habitat needs may not be covered by the course or medium filter approaches. These indicators also include monitoring response of species to changes in habitat structure and pattern.

Criterion 2: Ecosystem Condition and Productivity

Criterion 2 speaks to conserving forest ecosystem condition and productivity by maintaining the health, vitality, and rates of biological production. Productive capability of the forest ecosystem refers to current and future biomass creation. It assumes that the structure, functions, and attributes characteristic of productive forest ecosystems, and hence with the production of biomass, are maintained (e.g. photosynthesis, nutrient cycling, regulation of hydrological cycles, etc.).

The crux of Criterion 2 is to maintain the capability of the timber harvesting land base (THLB) to supply forest products in perpetuity, without compromising its capacity to also supply a range of additional values (such as critical habitat for wildlife and/or non-timber benefits). The approach maintains long-term productive capability by ensuring that the processes critical to ecosystem production are not compromised irreparably so that a stable base of forest is available for timber production within a defined landscape.

Criterion 3: Soil and Water

The intent of Criterion 3 is to conserve the integrity of soils within the DFA by reducing the levels of detrimental disturbance and remediating damage where it is a result of forest harvesting. This Criterion also addresses water resource protection required to maintain riparian ecosystems.

Criterion 4: Role in Global Ecological Cycles

Criterion 4 addresses the maintenance of forest conditions and the management activities that contribute to the health of global ecological cycles. Forest ecosystems are an integral part of the global carbon cycle as trees and soils absorb and release carbon dioxide (CO_2) through carbon uptake and decomposition. When trees are harvested, or when a natural disturbance such as fire occurs, the carbon that is not sequestered in forest products, is then released back into the atmosphere. The recognition that forests are a carbon sink, and that land-use, land-use change, and forest activities can have an effect on this sink requires consideration of forest carbon values in sustainable forest management planning.

The associated indicators for this Criterion consider the potential influence of forests on carbon uptake and storage and its implications to forest managers.

Criterion 5: Economic and Social Benefits

The intent of Criterion 5 is to sustain flows of forest benefits for current and future generations by providing multiple goods and services. Forests represent not only a return on investment for an organization but also a source of income and non-financial benefits for DFA-related workers, local communities, and governments. While there is limited information on the ecological services and non-timber benefits produced in the DFA, it is important to consider the costs and benefits of a variety of goods and services.

Criterion 6: Society's Responsibility

As forest management recognizes a broader range of forest values, particularly on public land, it is increasingly important that directly affected and interested stakeholders have input into management concerns. Current certification guidelines require public participation. There are also practical advantages to including the public in the planning process, such as accessing local knowledge and increasing public understanding and support for sustainable forest management.

In general, successful public involvement provides fair, effective, open, and accountable processes that take into account the multiple, and sometimes competing, social values the public have identified as important. Public processes which enable input from a wide range of stakeholders and interests, and which promote an improved and shared understanding of sustainable forest resource management, can lead to greater public support and potentially more streamlined implementation of SFM plans. Participation in decision-making processes guides forest management and promotes awareness and capacity building on all sides.

Photo: Gerry George

Indicator 1 – Ecosystem Representation

Indicator Statement	Target (Variance)
Representation of ecosystem groups across the DFA	a) Rare ecosystems = reserve (0 ha with harvest or roads)
	b) Uncommon ecosystems = reserve and/or retain high levels of structural retention for those ecosystems below target levels
	c) Common ecosystems = maintain at least 25% of each ecosystem in the NHLB or under an ecosystem restoration or High Conservation Value Area management regime.

Introduction

This indicator represents a 'coarse-filter' approach to maintaining biological diversity. Its intent is to sustain little-known species and poorly understood ecological functions by representing a portion of each ecosystem type in an unmanaged state (i.e., with no logging, road-building, or other industrial or urban/rural development). Unmanaged areas play a key role in maintaining biodiversity.

Maintaining representation of a full range of ecosystem types in an unmanaged state is a widely accepted strategy to conserve biodiversity in both protected areas and landscapes managed for forestry (e.g., Margules and Pressey 2000, Lindenmayer and Franklin 2002, Huggard 2004 and references therein).

An ecosystem representation analysis was completed and formed the basis of this indicator. It consists of three main steps: 1) defining ecosystem types across the land base, 2) defining the unmanaged portion of the land base (in this case, the Non-harvestable Land Base, or NHLB), and 3) determining the proportion of each ecosystem type that occurs in the NHLB.

For this analysis, ecosystem types were defined by grouping together site series based on similarities in plant species (Wells et al. 2004). Predictive Ecosystem Mapping (PEM) was used to map the resulting ecosystem types.

Rare and uncommon ecosystem groups were defined by the proportion of the study area that each group occupied. Rare groups were defined as those occupying less than 0.1% of the EKCP area (corresponding to < 2000 ha). Uncommon groups were defined as those with < 0.5% area in the EKCP (2000-9000 ha). Of the 24 ecosystem groups in the EKCP, nine were categorized as 'rare', and seven were categorized as

Ecosystem types with the lowest percent of their area in the NHLB, and thus considered to be most at risk, were those in the valley bottoms in the Interior Douglas-fir BEC zones (**Figure 17.** Representation within the East Kootenay Conservation Program Study Area ecosystems most at risk shown in red). These ecosystems are those that are most desirable for human settlement, agriculture and ranching, and have the greatest amount of private land. They have also been impacted the most from human activities, from towns and roads to recreational activities to fire suppression.

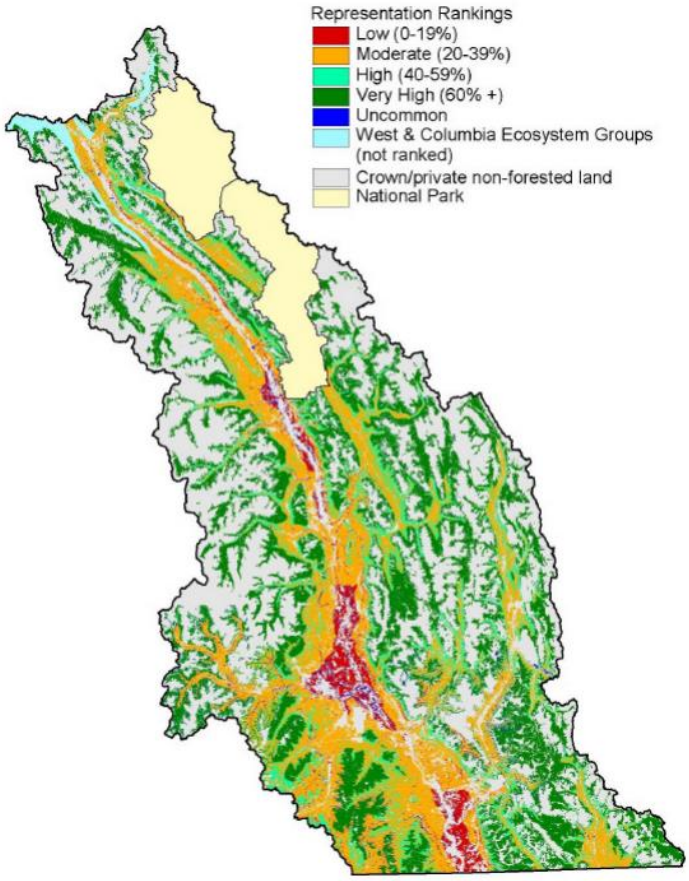


Figure 17. *Representation within the East Kootenay Conservation Program Study Area*

Targets

Targets for ecosystem representation are intended to be precautionary and are based on the results and recommendations of Wells et al. (2004) and Wells (2007). The recommendations are based on two main principles:

- Rare or uncommon ecosystem groups are potentially more vulnerable and thus deserve a higher level of protection than more common ecosystem groups, and,
- A minimum area of each common ecosystem should be protected in unmanaged areas.

Rare ecosystems are considered especially vulnerable due to their small area. For the nine rare groups in the East Kootenay, it was considered reasonable to set a target of 100% representation in the NHLB, i.e., no harvest or road building is to occur within them. The rare ecosystems and their associated targets can be found within the Ecosystem Representation SWP.

The majority of these ecosystems are already in the inoperable portion of the land base or would be expected to be placed in riparian or other reserves should they be encountered during cutblock layout.

Uncommon ecosystems were defined as those greater than 0.1% but < 0.5% (2000 - 9000 ha) in the EKCP study area. The uncommon ecosystems and their associated targets can be found within the Ecosystem Representation SWP.

The strategy for uncommon ecosystems will be to reserve all or a portion of them from logging or roadbuilding and to retain high levels of structural retention (> 50 stems per ha) on the remainder of them (see the Ecosystem Representation SWP for details). The exception will be Group 8, which requires ecosystem restoration to provide for its species and ecological processes. This ecosystem will be managed under an Ecosystem Management Regime.

Common ecosystem groups were defined as those with > 0.5% of their area in the EKCP. For these 18 groups, the target is to maintain at least 25% of their area in the NHLB, under an ecosystem restoration management regime, or under a High Conservation Value Area regime.

Targets for these ecosystems can be found in the Ecosystem Representation SWP. An ecosystem restoration management regime is defined as one in which the ecosystems are classified as Open Range or Open Forest under the Ungulate Winter Range Orders for the Cranbrook and Invermere TSAs and is planned for prescribed burning to restore historical ecological conditions and processes. A High Conservation Value Area (HCVA) regime is defined as one in which the area has been identified as an HCVA and is being managed in accordance with the management strategies outlined for that HCVA.

Strategy

1. The Strategic Planning Supervisor will ensure that an ecosystem representation analysis has been completed for the DFA after new ecosystem mapping has been legally designated for management. Quantitative targets will be determined for each ecosystem group.

2. Rare ecosystems and uncommon ecosystems below target representation will be made available on Canfor's GIS system through a map layer. The Strategic Planning Supervisor is responsible for communicating requirements to the WIM group to create and update this layer, and the WIM group is responsible for creating it and updating it when indicated.

3. Rare or uncommon ecosystem groups potentially occurring within planned blocks will be identified by the Planning Supervisors in the Planning Checklist and communicated to the Permitting Supervisors, as per the Ecosystem Representation SWP.

4. Permitting Supervisors will confirm the presence or absence of these sites within proposed blocks or along roads during field block layout using qualified layout contractors.

5. If a rare or uncommon ecosystem is confirmed in the field, Permitting Supervisors will ensure that the ecosystem is reserved from harvesting and road-building except for required road or trail crossings where no other practicable option exists, as per the SWP. Uncommon ecosystems may have high levels of retention prescribed for them, rather than reserving them completely, as per the SWP.

6. Uncommon ecosystem groups and common ecosystem groups with <25% representation will be targeted for HCVA placement during HCVA identification and update processes, and/or for ecosystem restoration. These areas will be managed under an ecosystem restoration or HCVA management regime. The Strategic Planning Supervisor is responsible for ensuring that each HCVA has an appropriate management strategy.

7. Rare and uncommon ecosystem groups below target will be prioritized for OGMA replacement locations, as long as they have equal or better old growth characteristics as the OGMA that is being harvested (see the OGMA Replacement SWP for details).

Monitoring and Reporting

Monitoring will be undertaken by:

1. Each year, the GIS Analyst will conduct an analysis to determine the area of rare and uncommon ecosystems contained within the net harvested area of cutblocks harvested in the previous calendar year.
2. If rare or uncommon groups have been harvested, a root cause analysis will be undertaken by the Strategic Planning Supervisor and the appropriate Permitting Supervisor, with the reasons why determined and recorded. Modifications will be made to the SWP if necessary in order to prevent future negative occurrences.
3. The results of this monitoring will be recorded in the SFMP Annual Report.

Photo: Gerry George

Indicator 2 – Conservation Areas Network

Indicator Statement	Target (Variance)
a) Percent of area in the Conservation Area Network (CAN) reserves within Canfor's operating areas	10% in total without HCVAs
b) Percent of area in the CAN reserves within Canfor's operating areas, by i. BEC variant ii. BEC subzone	i. 10% without HCVAs ii. 17% including HCVAs
c) Percent of area in CAN reserve areas within Canfor's operating areas by BEC zone	25% including HCVAs

Introduction

This indicator is a coarse-filter indicator at a large ecological scale. The rationale is to sustain little known species and poorly understood ecological functions by keeping a portion of each ecosystem type in an unmanaged state (i.e., with no logging, road-building, or other industrial or urban/rural development). The main difference between them is in terms of scale: the Conservation Areas Network (CAN) indicator defines ecosystems in terms of broader BEC variants, while Ecosystem Representation defines them more finely as groupings of similar site series.

Targets

The 2018 V 1.0 FSC National Standard requirements were followed to develop targets. FSC states that:

"The Conservation Area Network must comprise a minimum of 10% of the area of the Management Unit. The extent of the Conservation Areas Network on the Management Unit is identified by considering:

1. *Relative extent of the Conservation Areas Network in the area of ecological influence*
2. *Contribution of the Conservation Areas Network to the attainment of regional, provincial, national, and international (e.g., Aichi biodiversity targets) conservation and protected area targets*
3. *Best available scientific information and research regarding appropriate conservation targets*
4. *Previous contributions of the Organization to Conservation Areas Network on lands that were formerly within the Management Unit; and*
5. *Socio-economic considerations (e.g., implications for wood availability and harvest levels)."*

Based on this, Canfor set targets as follows:

a. The minimum requirement for the CAN over the entire management unit is 10%.
b. The minimum requirement for the CAN for each BEC variant and each BGC subzone is 10%, and 17% for both including HCVAs.

The minimum requirement for the CAN within each BEC zone is 25%, including HCVAs. The logic is as follows:

Meeting the minimum target is a requirement of the indicator, hence the development of target a.

To ensure good representation among all ecosystem types (BEC variants), the minimum was set at 10% per variant. This addresses scientific concerns about representation at finer ecological scales than the management unit. To address targets at international and national scales, Aichi targets were included. Aichi Target 11 states that:

'*By 2020, at least 17 percent of terrestrial and inland waters, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures and integrated into the wider landscapes*".

The inclusion of the phrase 'and other effective area-based conservation measures' permits the inclusion of HCVAs where ecosystem restoration is the management focus.

To include a more recent target, the Federal target of '25 by 2025' was also incorporated. This target is assessed at a broader scale of BEC zone as is typical of national targets (assessed at broad scales such as biome).

Strategy

1. The GAP Analysis will be reviewed every 5 years by the Manager, Biodiversity & Wildlife or delegate and updated if necessary, based on the availability of new information.
2. If substantial changes occur, a new peer review will be undertaken.

Monitoring and Reporting

1. Baseline reporting will consist of analyses showing the amount of protected reserves within each BEC variant relative to the target for that variant the first time that analysis was completed. Since the analysis is done on a large scale, results will not change significantly over short time periods.
2. The results of the analysis will be recorded in the SFMP Annual Report.

Photo: Jeff Roberson

Indicator 3 – Patch Size Distribution

Indicator Statement	Target (Variance)
Patch size distribution by Natural Disturbance Type (NDT), within Ecosections	Trend towards patch size distribution targets as defined in the Biodiversity Guidebook, by Natural Disturbance Type (NDT) within Ecosections, over the mid-term (20-50 years)

Introduction

In an ecosystem, an area that is relatively homogenous can be referred to as a patch. For example, in forests, a patch can be defined as a contiguous area of the same seral stage, e.g., areas of young forest, or of old forest. Within forests, natural disturbances such as wildfire and insect infestations maintain a mosaic of different sized patches across the landscape. This heterogeneity promotes biodiversity by providing a variety of environments for species to inhabit.

In general, species that live in large patches are more sensitive to habitat change than species that live in small patches, thus, it is important to ensure that large patches are retained and created in addition to small ones. Managing a range of patch sizes is recommended by ecologists to maintain potential habitat for the diversity of species in the area (Lindenmayer et al. 2006, Bunnell et al. 2007).

This indicator provides the basis for working towards a patch size distribution that resembles what is considered to occur naturally in the East Kootenay, based on the current best available information. To generate the patch size distributions used in this indicator, the East Kootenay operating area was split up into distinct ecological units (ecosections), and forest patches within each ecosection were grouped by Natural Disturbance Type (NDT). Explanations of ecosections and NDTs are provided below.

Natural Disturbance Types

Five NDTs are recognized as occurring in British Columbia for the purpose of setting biodiversity objectives. They are:

NDT1 – Ecosystems with rare stand-initiating events
NDT2 – Ecosystems with infrequent stand-initiating events
NDT3 – Ecosystems with frequent stand-initiating events
NDT4 – Ecosystems with frequent stand-maintaining fires
NDT5 – Alpine Tundra and Subalpine Parkland ecosystems

These different disturbance types characterize areas with different natural disturbance regimes. Much of the forest in the main valleys of Canfor's DFA is classified as NDT3, e.g., the White River, Upper Elk River, Flathead River, etc. More information on NDTs can be found in the Biodiversity Guidebook: Establishing Landscape Unit Biodiversity Objectives

Canfor's DFA in the East Kootenay contains NDT 2, 3, 4, and 5, but not NDT1 (this NDT occurs largely in coastal areas or in inland rainforests).

Ecosections

Ecosections are ecological areas with minor physiographic and macroclimatic variation, defined at the sub-regional level by the Ministry of the Environment. Ecosections cover hundreds of thousands of hectares each. A map of the Ecosections in the East Kootenay Region is shown in

Figure 18 below.

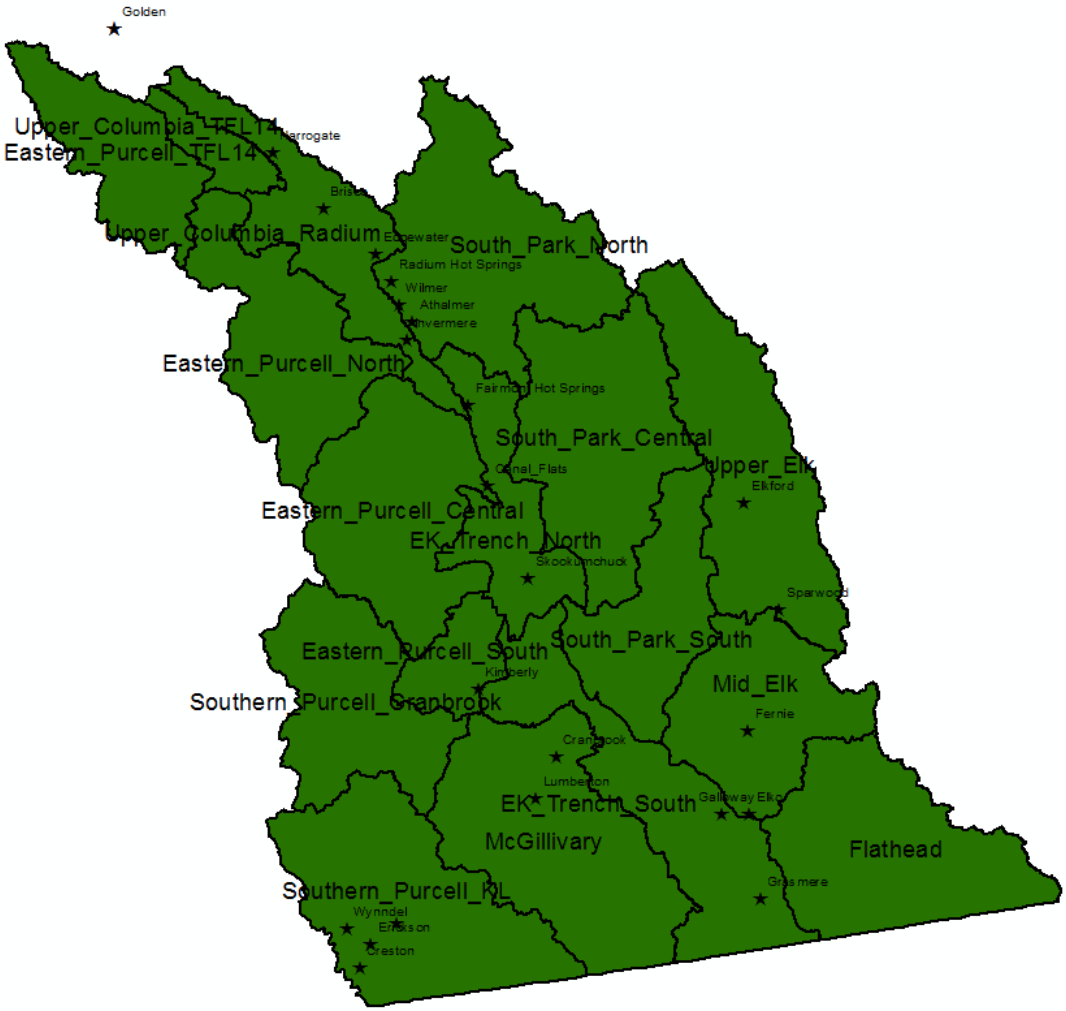


Figure 18. *Ecosections of the East Kootenay*

Targets

The target patch size distributions for very early seral patches within the NDTs that occur within the DFA are shown in **Table 19** below. These were based upon the targets found in the Biodiversity Guidebook (BC Ministry of Forests and Environment, 1995) and are loosely based on natural disturbance patterns, however they incorporate social and economic factors as well as biological ones.

Table 19. *Target patch size distributions for the NDTs in Canfor's DFA*

NDT2		NDT3		NDT4	
Patch Size (ha)	**Target Range (Percent)**	**Patch Size (ha)**	**Target Range (Percent)**	**Patch Size (ha)**	**Target Range (Percent)**
< 40	30-40	< 40	15-25	< 40	30-40
40-80	30-40	40-250	20-40	40-80	30-40
80-250	20-40	250-1000	30-50	80-250	20-30
250+	0 - 5	1000+	10-20	250+	5-15

Strategy

Analysis

1. The Woodlands Digital Technology Team (DTT) will calculate Patch Size distributions every year. Distributions will be calculated for the Natural Disturbance Type (NDT) within each ecosection in the DFA.
2. For these calculations, BEC variants will be classified into the NDTs as specified in the Biodiversity Guidebook, with the exception that there will be no differentiation for BEC variants based on the presence or absence of Douglas-fir. For newer BEC variants not listed in the Biodiversity Guidebook, NDT assignment is based on direction provided by the BEC and Ecology Research Program.
3. Ecosections are based on those delineated by the Ministry of Forests, with the boundaries modified slightly so they match Landscape Unit boundaries and TSA boundaries in areas where both boundaries are close together. Ecosections will be defined by groups of Landscape Units as per **Table 20**.
4. Patch size analysis will be conducted using the entire CFLB within each Ecosection in which Canfor operates in the East Kootenay, including parks or portions of parks that are found within LU boundaries in the LUs that Canfor operates. Patch size distributions will be calculated only for stands aged 0-19 years (very early seral). For each NDT, the calculation is:

Area of very early seral patches in each size category/Total area of all very early seral patches

5. The GIS patch size analysis will be completed once per year as a 'pulse check' analysis to incorporate the effects of fires and insect damage into management planning. A more in-depth analysis will be completed by the Strategic Planning Supervisor once every five years to reassess landscape level targets and foster continuous improvement in management across the landscape.

Operational Planning

1. The Planning Team will ensure, to the extent possible, that the size of new cutblocks made 'available' fits within, or trends towards, the desired patch size distribution targets for very early seral patches, by NDT and Ecosection (**Table 19**) and meets legal requirements.
2. Legal requirements under Section 64 are that the Net Area to be Reforested (NAR) of a cutblock does not exceed 40 ha, unless:
    - The block is being harvested for salvage of timber damaged by fire, insect infestation, wind, or other similar events, or for sanitation treatments.
    - 40% or more of the Basal Area is retained on the cutblock after harvesting.
    - No point within the NAR is more than 100m from the block boundary or a reserve patch of trees $\geq$ 0.25 ha, or more than one tree length from a patch of trees < 0.25 ha in size
    - The block is designed to be consistent with the structural characteristics and the temporal and spatial distribution of an opening that would result from a natural disturbance.

    ▪ Following the target patch size distributions will be considered to meet the temporal and spatial distribution of an opening resulting from natural disturbance. Structural characteristics will be met by green tree and snag retention, as well as WTP and riparian reserve retention.

3. The Permitting Team will design cutblocks such that they remain within the size category they were originally placed in by Planning. If the size category changes due to deletions of proposed areas or incorporation of areas previously not identified, Permitting will redo the analysis to determine whether the changes are consistent with patch size target ranges and/or legal requirements. If it does not meet the targets, Planning and Permitting will redesign the block together.
4. Patch size distribution targets will not be applied to patches in Open Range or Open Forest as defined in the Ungulate Winter Range Government Action Regulation U-4-006 and U-4-008.

Table 20. *Ecosection analysis units, the landscape units they are comprised of, and the rationale for these groupings*

Ecosection Number	Ecosection Name and Abbreviation	Rationale	LUs included (in their entirety)
1	Flathead Valley/Crown of Continent *FLV/COC*	Group the FV and COC ecosections because the current boundary between them roughly follows the MS/ESSF line in the middle of C18. Also, leaving the COC on its own would result in a small unit that splits a LU in half. Include all C17 and C15. Exclude C13 due to fire regime changes.	C14, C15, C16, C17, C18 (partly BCTS)
2	Mid-Elk Valley *ELV*	Split the Elk Valley ecosection in two – the mid valley (wetter) and the upper valley (drier). This difference is reflected in the BECs.	C24, C25 (Galloway), C26 (Galloway), C19
3	Upper Elk Valley *ELV*	Split the Elk Valley ecosection in two – the mid valley (wetter) and the upper valley (drier). The ecosection boundary runs on the west side of the Elk River, roughly where the mountains start up from the valley.	C20, C21, C22, C23, C38
4	Southern Park Ranges – South *SPK*	The TSA line is used as a division point for administrative purposes.	C27, C28, C29
5	Southern Park Ranges – Central *SPK*	The TSA line is used as a division point for administrative purposes and the legacy Canfor/Tembec boundary line.	I05, I06, I07, I08, I09, I10, I19
6	Southern Park Ranges – North *SPK*	I25 is included here because the portion in the Upper Columbia Valley ecosection is largely Open Range/Open Forest, for which patch size is not formally considered for planning purposes.	I20, I21, I22, I23, I24, I25, I33, Kootenay National Park (KMP1, 2, and 3)
7	East Kootenay Trench – South *EKT*	Exclude Open Range and Open Forest from the calculations. C30 is split in half by the ecosection line with the trench, but since the part in the trench is mostly BCTS, put it in the McGillivary Range.	C13, C32, C33, C34, C35, C36, C37
8	East Kootenay Trench – North *EKT*	I03 is split by 2 ecosections, the trench and the EPMs. It was placed with the EPM section since as decision needed to be made either way.	I03, I04, I11, I13
9	McGillivary Range *MCR*	C30 is split in half by the ecosection line with the trench. Although C01 and C09 are in the SPM, they were grouped here because they seem to be more similar to this unit than to Hawkins Creek.	C02, C10, C11, C12, C30, C01, C09
10	Upper Columbia Valley – TFL14 *UCV*	These two LUs are almost entirely contained within this ecosection. The TFL14 boundary is retained for administrative purposes.	I38, I35
11	Upper Columbia Valley – Radium *UCV*	Keep the TFL boundary as an administrative line. I32 is split between the trench and the EPM, but the majority occurs in the trench. I30 is split between the trench and mountain ecosections.	I29, I18, I32, I36, I30
12	Eastern Purcell Mountains – TFL14 *EPM*	These two LUs are almost entirely contained within this ecosection. Keep the TFL boundary as an administrative line.	I37, I34
13	Eastern Purcell Mountains – North *EPM*	All these LUs fall entirely or almost entirely within this ecosectio. The old Canfor/Tembec operating area line split was kept as a divide between the EPM - North from the EPM - South so that the analysis units did not become too large.	I31, I28, I27, I26, I15, I16, I17
14	Eastern Purcell Mountains – Central *EPM*	I12 split by ecosection line for 3 ecosections, but majority is in the EPM ecosection. I03 split by this ecosection and the trench.	I01, I02, I12, I14
15	Eastern Purcell Mountains – South *EPM*	C08 is split in half by the ecosection line between the EPM and the SPM, but since putting it in the SPM would leave only C31 by itself, it was grouped here.	C08, C31
16	Southern Purcell Mountains - Cranbrook *SPM*	These LUs are all entirely within this ecosection.	C04, C05, C06, C07
17	Southern Purcell Mountains – Kootenay Lake *SPM*	These LUs are all completely within this ecosection.	K02, K03, K05, K06

Monitoring and Reporting

Patch size distributions for very early seral patches will be calculated every year for annual monitoring purposes and reported on every five years in the SFMP Annual Report. Trends through time will be determined for each NDT within each Ecosection. The annual monitoring allows for the analysis to account for major natural disturbances that are likely impact patch size distributions over the short term.

Photo: Gerry George

Indicator 4 – Distribution of Forest Types

Indicator Statement	Target (Variance)
Percent distribution of forest type across the DFA	No significant decline (> 10% of the total amount) in broadleaf or mixedwood types by BEC zone over a 5-year period

Introduction

This indicator provides a high-level overview information on the relative area in the DFA covered by forests in broad classes, defined primarily by whether the trees are coniferous or deciduous/broadleaf, and by the broad age class of the stand. The coniferous/broadleaf distinction is the most important component of this indicator, not only because Canfor harvests coniferous trees, but because broadleaf and broadleaf/coniferous mixed stands generally support higher biodiversity than pure conifer stands.

In addition to their value for biodiversity, broadleaf stands also contribute to maintaining forest health. Many of the bird species that use aspen trees for nesting (e.g., Hairy, Downy, Three-toed, Black-backed woodpeckers) or foraging (e.g., Black-capped chickadee) are also voracious consumers of forest pests (Machmer and Steeger 1995). The presence of broadleaf trees in a stand may also enhance the growth of conifers by reducing the vigour of competing shrubs, fixing nitrogen, and increasing rates of decomposition, thus increasing the availability of nutrients (Simard 1995). Thus, they can contribute to long-term sustainability and productivity over several rotations.

These broad forest types are defined by Bunnell (2007) as follows:

- Conifer stands – at least 75% of trees are conifer
- Broadleaf stands – at least 75% of trees are broadleaf
- Mixedwood stands – neither broadleafs nor conifers attain 75%
- Recent Disturbance – 0 to 10 and 11 to 30 years old; too early in succession to classify confidently as mixedwood, broadleaf, or conifer leading
- Non-Vegetated upland – less than 5% vegetation cover; this includes roadsides, landings, and oil and gas developments (excludes lakes, rivers, and ponds)
- Non-Forest (treed) upland or wetland – less than 10% tree cover; includes the interior mountain heather BEC zone (alpine tundra), wetland, and any other sparsely treed sites such as non-commercial brush (NCBR). It also includes many recent cutblocks in Canfor's current analysis
- Water

The forested types are further divided into mid-seral (31-90 years) and late (> 90 years).

Finally, this indicator is important as forest operations can, through harvesting, reforestation, and stand-tending practices, have a significant influence on the composition of forest stands on the landscape through time. Shifts to a landscape with significantly less broadleaf or mixedwood stands would have negative impacts on biodiversity and ecosystem health and resilience.

Targets

Ideally, the target for this indicator would be determined by the range of natural variation in the amount of broadleaf and mixedwood stands that were naturally present on the DFA historically. However, there is no good information on what this was. The earliest estimates of broadleaf and mixedwood stands come from Forest Cover mapping in the 1970s after considerable harvesting had already occurred on the land base, and these estimates are considered poor.

Thus, for this indicator, trends through time will be used rather than a set quantitative target. A decline of more than 10% of the total amount of broadleaf or mixedwood over 5 years will be considered significant, at which point changes to reforestation or stand-tending strategies will be developed.

Photo: Jeff Roberson

Strategy

1. Canfor will not harvest broadleaf leading stands and these stands are netted out of the Timber Supply Review (TSR). The only exception to this would be for special wildlife circumstances, for example, to increase regeneration of aspen. In this case, approval from the Manager of Biodiversity and Wildlife is required.
2. Within stands that have a component of broadleaf trees, Canfor will retain the majority of individual broadleaf stems as single residual trees, with exceptions for roads, roadside harvesting, trails, landings, and safety. This will be specified in the Site Plan. Clumps of broadleaf trees will be prioritized for inclusion in Wildlife Tree Patches or left out of the harvested area of cutblocks. For further detail, see the Wildlife Tree Patch SWP.
3. In important Ungulate Winter Range areas, or locations known to have heavy browse problems (e.g., ungulates browsing on planted seedlings and killing or seriously damaging them), a component of the aspen trees will be knocked down to encourage suckering. This provides forage for deer and elk, as well as deterring these animals from browsing on planted seedlings.
4. Silviculture brushing procedures specify that incidental broadleaf trees within regenerating stands shall not be slashed down. In situations where there is a high density of suckering broadleaf trees that is impeding conifer growth, one (preferably the largest) broadleaf tree will be retained per circle of approximately 3-5 m radius. In this way, the growth of the clone will be concentrated on one tree rather than many, and the conifer trees will survive and grow.

Monitoring and Reporting

This indicator will be reported on a 5-year basis, based on calculations done by the DTT team using VRI data updated with RESULTS. Reporting on a more frequent basis is not necessary because the indicator will change very slowly due to the large scale of the analysis and the relatively small changes that occur each year in each category. Reports will include the new data for the year in question, in addition to comparisons with previous years, so that trends over time can be determined. Changes in the amount of broadleaf and mixedwood types will be determined on a rolling average basis.

If the changes show a decrease of more than 10% by license, the Manager of Biodiversity and Wildlife, Strategic Planning Supervisor, Permitting Foresters, and Silviculture Foresters will review the data and develop a strategy to increase the amount of broadleaf and/or mixedwood stands through time.

Indicator 5 – Old and Mature Forest Retention

Indicator Statement	Target (Variance)
Amounts of old and mature stands by landscape unit and BEC variant	Full compliance with the mature and old targets as defined in the Kootenay Boundary Higher Level Plan and spatial identification of stands to meet these targets (+ 0.3% of the target)

Photo: Paul Picard

Introduction

Conserving old growth forests is a key component of strategies to maintain biodiversity in managed forests. Further, the public places high value on old growth, whether for biological, spiritual, aesthetic, or other intrinsic values. This indicator provides one measure of the amount of old forest on the landscape.

Targets

Canfor chose to determine the range of variability in the amount of old growth stands that was been present under historic disturbance regimes and set the target to be within this range or some measure of it (e.g., the mean or median).

This method assumes that the closer forestry practices can maintain the patterns and process associated with natural disturbances like wildfire and windthrow, the greater degree to which biodiversity will be maintained. The difficulty with this method often lies in obtaining an accurate measure of the range of natural variability, and then dealing with the fact that natural variability can be very high and varies with the time period chosen to measure it within.

Old and mature forest targets are defined in the KBHLPO (2002) by BEC variant and landscape unit. Canfor will reserve the amount of forest required by these targets (as per the calculations in the Forsite (2007) reports), and any legal revisions to them.

Each landscape unit within the DFA has been assigned one or more ‘Biodiversity Emphasis Options’, of low, moderate, or high. Each option is designed to present a different level of natural biodiversity and a different risk of losing elements of that biodiversity. The ‘High’ option is designed to give higher priority to biodiversity conservation but with a higher impact on timber, while ‘Low’ is where social and economic demands are the primary objectives, but biodiversity conservation is also managed for. Many of the units ranked high contain habitat for species-at-risk such as Mountain Caribou or Tailed Frog. Landscape units rated ‘High’ require mature forest to be retained as well as old, to allow for recruitment into older age classes to occur. Some units rated Intermediate and Low also have this requirement.

Within the DFA, Natural Disturbance Types 2, 3, and 4 occur. The targets for these types, by Biodiversity Emphasis Option, are shown in **Table 21**. The age a forest must be to meet the requirements is 100 years for mature (120 years in ESSF) and 140 years (in NDT3) or 250 years (all others) for old.

Table 21. *Percentage of old and mature plus old forest to be retained, by BEC variant and biodiversity emphasis option (low, moderate, high)*

NDT	BEC	Mature plus old			Old		
		Low	Moderate	High	Low*	Moderate	High
2	ICH	>15	>31	>46	>3	>9	>13
	ESSF	>14	>28	>42	>3	>9	>13
3	MS	>14	>26	>39	>4.7	>14	>21
	ESSF	>14	>23	>34	>4.7	>14	>21
	ICH	>14	>23	>34	>4.7	>14	>21
4	ICH	>17	>34	>51	>4.3	>13	>19
	IDF	>17	>34	>51	>4.3	>13	>19
	PP	>17	>34	>51	>4.3	>13	>19

* The amount of Old Forest for the low option has been reduced by 2/3rds in this table. The full target must be achieved by the end of the third rotation (approximately 240 years).

** Taken directly from the Kootenay Boundary Higher Level Plan Order

Strategy

1. The Planning Team will ensure that Canfor has spatially identified old and mature forest areas by BEC variant, landscape unit (LU), and biodiversity emphasis option, up to the target amounts specified in Section 2 of the Kootenay-Boundary Higher Level Plan Order (2002) and the most current variances to that order.
2. The OGMA/MMA identification and allocation process will be consistent with the requirements outlined in KBHLPO and associated variances regarding stand age and type. The oldest stands will generally be selected first. Priority will also be given to old and mature stands in rare ecosystems and habitat for species-at-risk (i.e., grizzly connectivity), and to non-lodgepole pine leading stands. Stands less than 2 ha should not be selected. More information can be found in Canfor's OGMA and MMA Replacement SWP.
3. In units where old and/or mature stands are in deficit, recruitment stands will generally be designed to meet the targets in the shortest amount of time, however, other factors such as connectivity between existing old stands, whether it is in a riparian area or provides habitat for a species-at-risk may also be considered.
4. The selected stands will be made into a digital layer and incorporated into Canfor's GIS system so they can be avoided when forest development is planned.
5. Canfor Planning, Permitting, and Field Operations will respect the selected OGMA and MMA boundaries and treat these areas as reserves unless one or more of the conditions set out under the Old Growth Replacement SWP are met.
6. Where OGMAs/MMAs or portions of OGMAs/MMAs that are > 1 ha are logged as part of a cutblock or new road, a replacement stand or set of stands will be identified that are of equal or superior old or mature forest value. These stands will be in the same BEC variant/LU/ as the logged OGMA/MMA. The replacement stands will be digitized and incorporated into the digital layer on an on-going basis. The OGMA and MMA SWP provides details on responsibilities and methods for how these replacement stands will be selected and digitized. The planners and permitters are responsible for identifying replacement areas in collaboration with each other.

7. The Strategic Planning Supervisor is responsible for working with the DTT to ensure that the current amount of mature and old forest identified as OGMA/MMA is compared to the KBLUPO target requirements annually. This will be reported in the SFMP Annual Report.
8. If deficits are identified through the analysis in Point 7, the Planning Team is responsible for ensuring that additional stands are identified so that targets are met. This must be done within 30 90 days of deficits being identified.
9. Identified Old and Mature stands that have had their old or mature values significantly impacted by wildfire, flood, outbreak of insects or disease or other unforeseen biotic or abiotic factors will be replaced with existing old and mature stands or recruitment stands following the selection principles in Point 2 of this strategy.
10. Old and mature stands will be considered a High Conservation Value and be one of the factors considered in High Conservation Value Area identification.

Monitoring and Reporting

Annual monitoring will be conducted by the Strategic Planning Supervisor as outlined in Point 7 of the Strategy above and reported in the SFMP Annual Report.

Indicator 6 – The Range of Natural Variability

Indicator Statement	Target (Variance)
Area of old, mature, and early seral stands by ecosystem (BEC subzone) grouping, for current and future time periods relative to the Range of Natural Variability	To be compatible with (either within or moving towards) the Range of Natural Variability

Photo: Lloyd Havens

Introduction

Conserving old forests is considered to be a key component of strategies to maintain biodiversity in managed forests. Further, the public places high value on old forest for biological, spiritual, aesthetic, and intrinsic values.

This indicator assesses the extent to which early, mature, and old seral stages are projected to change through time under current management (TSR IV). It shows not only increases and decreases through time, but whether these changes put the total area of the seral stage outside amounts seen historically. This is shown by the area of each seral stage relative to the Range of Natural Variability (RNV). Here, the Range of Natural Variability refers to the amount of the seral stage estimated to have been present under historic fire regimes in the East Kootenay (Davis 2009).

Comparing present and projected future ecosystem conditions to RNV represents one type of environmental risk assessment. The assumption is that the more the current ecosystem condition deviates from the historic condition, the greater the risk to that ecosystem and the species associated with it.

Targets

In order to determine RNV, an extensive modelling project was carried out using the Landis II model. This is a sophisticated modelling software designed to simulate the different dynamic processes that shape the landscape over time. It incorporated the best available data on the characteristics of disturbance regimes in the East Kootenay, as well as vegetation dynamics that simulated growth and successional state of plant communities over time.

The model was run for the entire Canfor Kootenay operating area. Results of the model are presented in terms of the area burned by fire severity classes (i.e., low intensity ground fires to high intensity stand replacing events) and BEC zone and NDT across areas in the Kootenays.

The model was also run using the number of cohorts, because this captures ecological information rather than age class alone (i.e., stand structure and uneven aged ecosystems).

Photo: Garred Huber

Because the Landis II model was only run for 1000 years into the past and 250 years into the future (a relatively short time period to estimate RNV) the full range of variation (minimum to maximum) was selected as the target range. Additionally, future climate trends are expected to differ from historic and current ones in that fires are projected to increase in frequency and severity as the climate warms and summers become hotter and drier. Due to this, a conservative approach to managing old forest is warranted. Amounts of old forest projected through time under this model may not be accurate if the amount of forest burned by wildfire increases dramatically in the future.

Strategy

1. The Strategic Planning Supervisor and the Manager of Biodiversity and Wildlife are responsible for ensuring that a simulation model exists, appropriate to the East Kootenay, that can be used to estimate the range of historic variability and project future trends in forest seral stages.
2. They will ensure that this model will be re-run every 15 years, or:
    i. Within five years of a new Timber Supply Review (TSR) being released with significantly different forest management assumptions than the previous TSR.
    ii. When new data on the range of natural variability becomes available that are sufficiently different from the current model's assumptions of the range of natural variability that it warrants adjusting/re-running the model.
3. They will ensure that the report on results of the model simulation will include comparisons of current, historic, and future conditions of each seral and structural stage, by ecosystem and TSA.
4. If the current condition of a seral/structural stage is significantly outside RNV, and the projected future trend is not towards RNV, an assessment containing the following will be conducted by the Planning Team:
    i. Potential reasons for the deviation
    ii. A comparison between current trends and the 20-year projected trends to determine if trends with diverge on converge
    iii. An assessment of the impacts of climate change on that particular seral or structural stage
    iv. An assessment of current harvest practices on that particular seral or structural stage and if there are any practicable changes that could be implemented to bring the stage closer to the RNV
5. If there are practical changes that could be implemented, the Planning Team will discuss these with the appropriate Canfor staff (e.g., Permitting, Silviculture, Operations) and develop strategies to implement them

Monitoring and Reporting

The simulation model used to estimate the range of historic variability and future trends will be reviewed and re-run every 15 years, or within 5 years of a new Timber Supply Review (TSR) being released with significantly different forest management assumptions then the previous TSR.

The model does not need to be run more frequently because of the very large area that is being modelled (10s to 100s of thousands of hectares for each ecosystem type within each TSA), and the long time periods over which the model is being run, which means that the resultant patterns change slowly. As part of the review, the scientific literature on historic variability in the East Kootenay and adjacent areas with similar ecosystems will be reviewed to determine if model parameters need to be changed. In addition, the type of model used may also be changed, to ensure that it remains a valid and rigorous method of modelling, consistent with current practice.

Indicator 7 – Interior Forest Habitat

Indicator Statement	Target (Variance)
Median patch size of Old Growth and Mature Management Areas, by NDT and ecosection	Median patch size is maintained or increases through time

Introduction

This indicator was developed to serve as an index of interior forest for old and mature forest management areas (OGMAs and MMAs). Interior forest is defined as the part of a forest that shows no detectable edge effects. It is important because creating edges in a forest stand, for example by logging or roadbuilding through a forest, changes the forest near the edge in three main ways:

- By physically disturbing the vegetation and soil.
- By increasing the amount of light, wind, and moisture that enters the forest.
- By allowing for greater access into the stand from various plant and animal species, pollen, and seeds.

The increased blowdown, productivity, evapotranspiration, and nutrient cycling that generally result from these changes often lead to increases in seedling establishment and sapling density, increases in shrub cover, increases in overall plant growth and mortality, and changes in plant species composition (Harper et al. 2005). A reasonable estimate of the biological distance of most edge effects is considered to be 50m, with a maximum up to 200m (Huggard and Kremsater 2010).

Photo: Ashleigh Harvison

Targets

The target for this indicator was established on the following principles: the smaller the size of a patch, the less interior habitat it will have. For example, if edge effects extend 50 m from a forest edge, a square patch of 1 ha or less will have no interior forest habitat. If edge effects extend up to 200 m, a square patch of 16 ha will have no interior forest habitat. Thus, the target was based on the concept that larger patches will have more interior habitat and therefore provide more effective habitat for species associated with interior forest habitat.

A specific quantitative target for all ecosections could not be set due to the large amount of variation among the different ecosections. Finally, the median polygon size, rather than the mean, was used to measure changes because it is less affected by skewed values and outliers than the mean, and the data distributions are heavily skewed.

Strategy

Strategic and Field Implementation

1. In strategic planning processes that re-distribute OGMAs or MMAs, all else being equal, weight larger OGMAs and MMAs more heavily than smaller ones (i.e., for OGMAs within the same BEC, species group, etc.).
2. When selecting a replacement OGMA/MMA for one that is being harvested, the Planning and Permitting Team will, where possible, try to add on to existing OGMAs or MMAs in the same BEC and LU, or to create a larger OGMA/MMA as per the OGMA and MMA Replacement SWP.

Analysis

1. The data for OGMA/MMA size distributions will be provided by the Woodlands Digital Data Technology Team (DTT) every five years, or more frequently at the direction of the Strategic Planning Supervisor. Distributions will be calculated by NDT within each Ecosection in the DFA.
2. For these calculations, BEC variants will be classified into the five NDTs as specified in the Biodiversity Guidebook, with the exception that there will be no differentiation for BEC variants based on the presence or absence of Douglas-fir as per the Patch Size Strategy. Only NDT2, NDT3, and NDT4 will be used for calculations since these are the main NDTs occurring with the forested portion of the DFA. MMAs will only be included for Ecosections containing Landscape Units where legislation requires MMAs.
3. Ecosections will be defined by groups of Landscape Units as per **Table 22** below. These groupings are based on the Ecosections as delineated by the Ministry of Forests with the boundaries modified slightly so they match LU boundaries and TSA boundaries in areas where both boundaries are close.
4. OGMA/MMA analysis will be conducted using the entire Crown Forest Landbase within each Ecosection in which Canfor operates in the East Kootenay, including parks or portions of parks that are found within LU boundaries in the LUs that Canfor operates.
5. The Strategic Planning Supervisor will plot trends in OGMA/MMA size class distributions by NDT and ecosection in 5-yr increments and compare them statistically to determine if distributions are stable (no change) or any shift has occurred in the distributions. Trends will be summarized in the SFMP Annual Report.

Table 22. *Parameters for OGMA/MMA analysis for interior forest habitat*

NDTs to Include	Size Class Divisions (ha)	Ecosections	
		OGMAs – required in all ecosections	MMAs – only present within the ecosections listed below as per legislative requirements under KBLUP
2 3 4	≥1.0 <5.0 ≥5.0 <10.0 ≥10.0 <20.0 ≥20.0 <40.0 ≥40.0 <80.0 ≥80.0 <100.0 ≥100.0 <250.0 ≥250.0 <500.0 ≥500.0 <1000.0 ≥1000.0	All	Flathead Upper Elk South Park Central South Park North EK Trench North McGillivary Eastern Purcell Eastern Purcell Central Southern Purcell Cranbrook

Monitoring and Reporting

The median of the size class distributions of the OGMA/MMAs will be calculated every 5 years by the Strategic Planning Supervisor and compared to the medians from previous 5-year intervals to determine if it is remaining stable or upward or downward trends exist for each ecosection/NDT combination. The polygon sizes are calculated by the DTT team, and details on the methodology used to calculate the polygon sizes are available from the GIS Analyst, Kootenay Region.

Indicator 8 – Wildlife Tree Patch Retention

Indicator Statement	Target (Variance)
Percent of Wildlife Tree Patches retained across the DFA	a) 3.5% per block or 7% per cutting permit (100%)
	b) By 2026, develop single tree retention targets for cutblocks in BEC zones other than the ESSF

Introduction

Wildlife tree retention (WTR) refers to wildlife tree patches, riparian reserves and individual tree retention in partial cut stands that are reserved for at least one rotation, or until the trees in the harvested portion of the cutblock are mature. This indicator refers to the percentage of wildlife tree retention within each cutblock and permit.

WTR is used to provide protection for known wildlife habitat features (including standing dead and dying trees), to provide attributes important to key ecological processes (including coarse woody debris, tree species diversity, and understory vegetation diversity), to protect small, local sites of special biological or cultural significance (i.e. unclassified riparian or wetlands, rock outcrops or rare plants or ecosystems), and/or to provide stand level complexity (vertical and horizontal) to harvest areas under even-aged, short rotation management.

Photo: Gerry George

Targets

Wildlife tree retention targets were established by the government under the Forest Planning and Practices Regulation (FPPR). They speak to retaining 3.5% of the Net Area to Reforest (NAR) of each cutblock or 7% of the NAR by cutting permit as a WTP, hence the target in part a) of this indicator.

Strategy

1. Layout contractors will determine the placement of WTPs based on guidance found within the Wildlife Tree Patch Standard Work Procedure.
2. Permitting will ensure that every cutblock or cutting permit will meet the LU/BEC variant WTP retention targets for the LU/BEC variant that the block or permit falls within. Targets may be met either through reserve patches or single trees, or a combination of the two.
3. Permitting will ensure that the spacing requirements for WTP are met, such that there is a suitable stand or WTP every 500 m. To be suitable a stand is supposed to be capable of producing wildlife trees, that is, a mature stand capable of producing large snags.
4. The Strategic Planning Supervisor will complete an assessment of all blocks and permits that were harvested in the previous calendar year. The results will be presented in the SFMP Annual Report.

Monitoring and Reporting

The Strategic Planning Supervisor will complete the monitoring of this indicator to ensure legal targets are met. Targets for part b of this indicator will be developed by 2026 as the systems are not currently in place to assess this information.

The results of this indicator will be presented in the SFMP Annual Report.

Indicator 9 – Riparian Management

Indicator Statement	Target (Variance)
a) The average riparian management area in each block is planned in accordance with the widths in **Table 23**, including FRPA legal minimums on each stream, lake, and wetland	0 non-compliances
b) Number of blocks with harvest operations trespassing into riparian reserves	0 non-compliances

Introduction

Riparian areas occur adjacent to the banks of streams, rivers, lakes and wetlands. These are the zones where terrestrial and aquatic systems connect and interact and are highly diverse and productive areas. On some large river systems, the riparian area may exist on a floodplain up to a kilometer or more from the actual river, while small streams in steep narrow gullies may have virtually no riparian area to speak of.

Approximately half of the forest-dwelling vertebrates in British Columbia use riparian ecosystems at some point in their lives (Bunnell et al. 1999). While some species are dependent on riparian areas throughout their lives (e.g., beaver, mink, otter, amphibians, some waterfowl), there are many others that use or need riparian habitat at some stage of their life cycle or during daily activities.

Streamside vegetation contributes to stream channel and bank stability, acts as a filter for sediment, provides shade to regulate stream temperatures, and provides a continuous source of woody debris, which influences sediment transport rates and channel morphology. Riparian areas also provide ecological connectivity between valley bottoms and high elevations, and also from one valley to another. They provide areas for secure movement for large animals like moose and bears as well as small ones like bats and birds.

Photo: Ashleigh Harvison

Targets

1. The targets for minimum riparian widths are set both under legal acts (FRPA) and the FSC BC Standard. The ta**Error! Reference source not found.**

Monitoring and Reporting

Inspections of harvested areas will be completed during and following harvesting activities by Canfor, and any issues concerning the Riparian Management Area will be noted and tracked using Enablon. These inspections are completed by Canfor Supervisors. The number and type of riparian incidents will be summarized during the SFMP Annual Report monitoring by the Strategic Planning Supervisor and non-compliance issues with respect to FRPA will be reported promptly to the appropriate government officials.

Riparian reserves will also be assessed during the annual HCVA Effectiveness monitoring program.

Table 23. Minimum targets for riparian reserve zones and riparian management zones under the Forest and Range Practices Act (FRPA) and the FSC-BC Standard.

Definition		FRPA Requirements		FSC Requirements	
		RRZ (m)	RMZ (m)	RRZ (m)	RMZ (m)
Stream Class					
S1A **S1B**	>100m wide 20 – 100m wide	0 50	100 20	30	40 (65% retention)
S2	5 - 20m wide	30	20	30	40 (65% retention)
S3	1.5 – 5m wide Fish bearing OR community watershed	20	20	30	20 (65% retention)
S4	< 1.5m wide Fish bearing OR community watershed	0	30	30	20 (65% retention)
S5/FSC 5a	> 3m wide NOT fish bearing or NOT community watershed	0	30	20	20 (65% retention)
FSC 5b	> 3m wide NOT fish bearing or NOT community watershed AND non-domestic watershed AND > 500m upstream of a fish-bearing stream	N/A	N/A	0	NDT 1, 2, 4 = 15m (30% retention) NDT 3 = 15m (10% retention)
S6/FSC 6a	≤ 3m wide NOT fish-bearing or NOT community watershed	0	20	20	20 (65% retention)
FSC 6b	≤ 3m wide NOT fish bearing or NOT community watershed AND non-domestic watershed AND > 250m upstream of a fish-bearing stream	N/A	N/A	0	NDT 1, 2, 4 = 15 (30% retention) NDT 3 = 15m (10% retention)
Wetlands					
W1	> 5 ha area	10	40	20 from the edge of the wetland	15 from the edge of the wetland with 30% retention
W2	1 – 5 ha area in the IDF	10	20		
W3	1 – 5 ha area not in the IDF	0	30		
W4	0.25 – 1 ha area in the IDF	0	30		
W5	2 adjacent wetlands separated by: 1. < 60m and both < 5 ha OR 2. < 80m if one is <5 ha and the second is >5 ha 3. OR ≤ 100m if both are > 5 ha	10	40		
Lakes					
L1	> 5 ha area	10	Varies	15 from the edge of the lake	15 from the edge of the lake (30% retention)
L2	1 – 5 ha in the IDF	10	20		
L3	1 – 5 ha not in the IDF	0	30		
L4	0.25 – 1 ha	0	30		

Indicator 10 – Species of Management Concern

Indicator Statement	Target (Variance)
Forest management activities conform to operational plans that include the appropriate management strategies from the SWP for blocks containing habitat for species of management concern	100% (5)

Introduction

While habitat for most species should be provided through the application of the coarse and medium filter ecological strategies in this SFMP, some species require specific management consideration to account for their habitat needs. This can be driven by the fact that their habitat requirements are very specific, their populations are low, or that society has desires to manage for them. These species have been termed 'Species of Management Concern'.

To identify Species of Management Concern, a complete known species list of all confirmed vertebrates, and red-and blue-listed invertebrates and plants was compiled into the Canfor Species Database. This species list was checked with local naturalists, biologists, and others familiar with species in the area. Red and blue-listed plant communities were also included. Each species or plant community was categorized according to its federal, provincial, and regional conservation status, and provincial ranking.

Targets

The 95% target was chosen to ensure a high degree of conformance with the designated management strategies. These can be found in the following Standard Work Procedures:

1. Species of Management Concern SWP
2. Whitebark Pine SWP
3. Wildlife Habitat Features SWP
4. Management Around Avalanche Paths SWP
5. High Conservation Value Areas SWP
6. Ecosystem Restoration BMPs
7. Migratory Bird Strategy SWP
8. Caribou SWP
9. Grizzly Bear HCVA SWP
10. Williamson Sapsucker BMPs

Strategy

1. The Habitat Biologist is responsible for the upkeep of the Canfor Species Database through which the Species of Management Concern are defined. This entails updating the database at least annually to account for changes in the status of species at risk, or changes in the other categories that designate species of management concern.
2. The Manager of Biodiversity and Wildlife, or delegate, is responsible for developing a Standard Work Procedure (SWP) outlining the forest management strategies to be applied to Species of Management Concern when their habitat falls within proposed cutblocks. These strategies will be based on the best available science.
3. The Manger of biodiversity and Wildlife or delegate will review the SWP as needed when monitoring or the Species Database indicates the need to do so. This is to determine if changes are required in order to keep the SWP up to date with best available science.
4. Woodlands staff will complete periodic training and contractors will complete annual training on species of management concern, including information on what Species of Management Concern are and what the SWP entails.
5. Management strategies for Species of Management Concern will be written into the Site Plan as per the SWP.
6. The Strategic Planning Supervisor will complete a site plan and block review for all the blocks that overlap with Species of Management Concern habitat that were harvested in the previous calendar year. This will involve comparing the site plans to the standard work procedure to ensure that the appropriate management strategies were applied to the blocks.
7. If discrepancies are identified, a root cause analysis will be completed by the Strategic Planning Supervisor and the associated Permitting and Harvesting Supervisor and remedial actions will be created. The failures will be entered into Enablon for tracking and trend assessment.
8. A sample of blocks overlapping species of management concern HCVAs will be field reviewed during the annual HCVA Effectiveness Monitoring program.

Monitoring and Reporting

The monitoring described in points 6 and 8 above will occur annually and be included in the SFMP Annual Report under the appropriate indicators.

Indicator 11 – Tree Seed

Indicator Statement	Target (Variance)
Percentage of TSAs and TFLs that are consistent with the *Chief Foresters' Standards for Seed Use* in Canfor's annual planting program (95% compliance and 5% variance)	100%

Introduction

The province's Chief Forester established the *Chief Forester's Standards for Seed Use* to maintain the identity, adaptability, diversity, and productivity of the province's tree gene resource. This indicator focuses on the climate change and adaptability areas of the FSC and SFI standards. Compliance with these the Chief Foresters' standards also ensures no genetically modified seed is used in the province of B.C.

Restricting where tree seed is deployed to areas where it is suitably adapted to the physical environment is paramount to ensure future forests are productive, healthy and resilient. In BC, this is accomplished by following provincial regulations and standards as currently specified in the *Chief Foresters' Standards for Seed Use*. The BC Government has conducted extensive research through provenance and progeny trials which have clearly demonstrated that seedling performance and growth are significantly related to its seed source.

Select Seed is collected from trees growing in natural forests. Seed is considered "select" if it exhibits superior traits from other wild stands – e.g. increased growth, pest or disease resistance, improved form. Using select seed offers a range of biological, social and economic benefits including conservation of genetic diversity, improved forest health, improved forest resiliency, increased site productivity and reduced brushing.

Genetic diversity allows trees to adapt to changes in environmental conditions. The tree improvement program selects trees with superior traits, breeds them and monitors the progeny across a variety of sites and climates in provenance tests. The Forest Genetics Council's Tree Improvement Program maintains a comprehensive gene resource management strategy that includes tree breeding, gene archive activities, management of reserves and production of select tree seed.

Targets

The target is to meet the legal standard set by the government. The legal standard is the best method to ensure planted trees area genetically suitably for the site and provides the best opportunity for the seedlings to be productive, healthy and resilient as it is based on a long running well supported government program of world respected genetic research. New information is incorporated into the standard regularly.

The *Chief Foresters' Standards for Seed Use* recognizes that there may be instances where it is not operationally feasible to always follow the current standard (e.g. transitional sites, small areas just outside the transfer limits). It provides the flexibility to address these sites by requiring 95% compliance with the standard. This is accommodated by the -5% variance.

Strategy

1. The Planning Supervisor identifies the BEC and variant overlap during the block planning process and notes this in the planning checklist. This checklist is provided to the layout contractor.
2. Layout contractors are responsible for collecting pre-harvest cutblock data during the recce and layout phases and providing this information to the Permitting Supervisor in the block summary package.
3. The Permitting Supervisor classes the site into biogeoclimatic (BEC) zones, subzone, variant and site series and applies the appropriate stocking standards based on this classification.
4. The block is harvested.
5. A post-harvest assessment is completed by the Silviculture Supervisor immediately after harvesting is complete to verify the BEC classification and stocking standards. If the BEC is incorrect, the block is re-stratified and the site plan is amended.
6. The Silviculture Supervisor completes a sowing request for seedlings based on the results of the post-harvest assessment and any site limiting factors that have been identified (i.e., moisture regime, frost risk, rust risk). *The use of genetically modified organisms is prohibited.*
7. The Silviculture Supervisor will supervise the tree planting to ensure that it is in accordance with the planting management system (critical aspects include stock handling, planting quality, and density management).
8. The Silviculture Supervisor will submit the seed data annually through the government RESULTS portal.
9. The Strategic Planning Supervisor and the Silviculture Supervisors will analyze the Seed Transfer Infoview reports annually in order to track compliance for each of the TSAs and the TFL. These are reported in the SFMP Annual Report.

Monitoring and Reporting

Seed transfer reports will be monitored annually for compliance purposes and reported in the SFMP Annual Report. The raw seed data (number of trees planted vs. number of trees planted outside of the transfer limits) are reported annually through the government RESULTS portal.

This indicator is part of an adaptive management framework. Genetic issues with seedlings and seed performance that are identified during surveying are translated back to the tree seed breeders to improve seed stock in an attempt to mitigate those issues in the future.

Indicator 12 – Natural Regeneration

Indicator Statement	Target (Variance)
a) Percentage of stands at free growing that have a component of natural regeneration	100% (-10%)
b) 60% of stands have 60% of their total inventory coming from natural regeneration at free growing	60% (-10%)

Introduction

This indicator ensures that a significant component of regeneration in cutblocks is derived from seed sources that are naturally present. Conserving local seed sources contributes to maintaining genetic diversity in regenerated cutblocks which is important for ensuring that tree species are adapted to local conditions and are more likely to withstand environmental extremes. Genetic diversity will also help buffer future forests from climate change and insect and disease attacks.

Natural regeneration can also contribute to maintaining a diverse mix of species which is important for mitigating potential forest health impacts. Several species are best managed for using natural regeneration. These include balsam, hemlock, cedar, and deciduous species such as paper birch and trembling aspen.

However, being too reliant on natural regeneration can result in reduced species diversity as site conditions generally favour one species over others. In addition, natural regeneration can often take 7-15 years to establish and can result in less successful reforestation, loss of site occupancy, and therefore a loss of productivity.

Photo: Kennedy Thomson

Targets

Two targets were established to reflect the spatial scale and significance of the component of natural regeneration. The first target of 100% of cutblocks achieving some component of natural regeneration ensures all blocks are managed for natural regeneration. The second target reflects the importance of having a significant component (defined as 60%) of natural regeneration on majority (60%) of our cutblocks. A 10% variance has been included on each target to reflect that site-limiting factors may limit the success on some sites. The targets are based on a historical analysis of the densities of stands in the DFA at free growing and comparing that to the density of trees planted.

Strategy

1. A post-harvest assessment is completed by the Silviculture Supervisor immediately after harvesting is complete to verify the BEC classification and stocking standards. If the BEC is incorrect, the block is re-stratified and the site plan is amended.
2. The Silviculture Supervisor completes a sowing request for seedlings based on the results of the post-harvest assessment and any site limiting factors that have been identified (i.e., moisture regime, frost risk, rust risk). *The use of genetically modified organisms is prohibited.*
3. The Silviculture Supervisor is responsible for the implementation of the survey program to assess species performance, forest health, and stocking densities in accordance with the stocking standards. The following surveys are completed by silviculture contractors or trained staff (timing is approximate):
    a. Regeneration delay surveys
    b. Monitoring surveys – 2- or 5-years post-planting, as required.
    c. Free growing surveys – 10 to 20 years post-harvest, as required.
4. The results of these surveys are stored in Canfor's Land Resource Manager (LRM) program and associated block files.
5. The Silviculture Supervisor will declare regeneration delay and free growing achieved based on the results of the surveys completed. These declarations will be entered into LRM and the government RESULTS system.
6. The Silviculture Supervisor will prescribe the following treatments, if required, to maintain regeneration on the cutblock:
    a. Fill planting – review the root causes of seedling mortality and devise new species/stock type necessary to achieve full stocking.
    b. Brushing – release regeneration from competing vegetation.
    c. Maximum density spacing (thinning) – reduce the site density of individuals to ensure full stocking of the stand in the future.
7. The Strategic Planning Supervisor will compare the free growing site species label to that of the planting label for each stand that was declared free growing for the previous year. This will allow a comparison between what was planted vs. what is on the site when the stand is declared free growing and fully stocked.
8. The results from analysis point 8 will be recorded in the SFMP Annual Report.

Monitoring and Reporting

The results of the analysis described in point 7 in the above noted strategy will be recorded and monitored in the SFMP Annual Report.

Indicator 13 – Mix of Species Planted

Indicator Statement	Target (Variance)
Percentage of hectares planted with more than one species (by year).	100% (-30%)

Introduction

This indicator ensures that Canfor's reforestation program plants cutblocks with a mix of species to enhance biological diversity and site productivity. Reforesting with a mix of species is important to produce healthy resilient forests and to maintain biological diversity. Monoculture forests are less resilient, as seen with the recent forest health outbreaks. Managing a mix of species will reduce impacts of increasing and changing forest health issues, may reduce impacts of climate change, and will provide options for the future. This indicator will strive to reduce the risk of epidemic forest health impacts contributing to the long-term health and productivity of forests.

Planting seedlings is a vital component of Canfor's reforestation program and it has a substantial effect on forests and is a critical step to realize productivity objectives. Planting a mix of species also contributes to maintaining or enhancing genetic and species diversity of the cutblock.

Photo: Kennedy Thomson

Targets

The target is 100% to ensure mixed species planting is strongly considered for all sites as it is critically important to implement universally. A 30% variance was included to recognize that planting multiple species is not always ecologically feasible due to site limiting factors. Additionally, some species are best managed for using natural regeneration.

Strategy

1. The Planning Supervisor identifies the BEC and variant overlap during the block planning process and notes this in the planning checklist. This checklist is provided to the layout contractor.
2. Layout contractors are responsible for collecting pre-harvest cutblock data during the recce and layout phases and providing this information to the Permitting Supervisor in the block summary package.
3. The Permitting Supervisor classes the site into biogeoclimatic (BEC) zones, subzone, variant and site series and applies the appropriate stocking standards based on this classification.
4. The block is harvested.
5. A post-harvest assessment is completed by the Silviculture Supervisor immediately after harvesting is complete to verify the BEC classification and stocking standards. If the BEC is incorrect, the block is re-stratified and the site plan is amended.
6. The Silviculture Supervisor completes a sowing request for seedlings based on the results of the post-harvest assessment and any site limiting factors that have been identified (i.e., moisture regime, frost risk, rust risk). *The use of genetically modified organisms is prohibited.*
7. The Silviculture Supervisor will supervise the tree planting to ensure that it is in accordance with the planting management system (critical aspects include stock handling, planting quality, and density management).
8. The Silviculture Supervisor will track the seedling and planting data through Canfor's internal silviculture tracking system, Plant Wizard.
9. The Strategic Planning Supervisor will request the species planted information from the Silviculture Supervisors who will pull the report from Plant Wizard. The information will include the species prescribed for planting for all stands that were planted in the previous calendar year (this includes fill plants).
10. The results of this monitoring will be presented in the SFMP Annual Report.

Monitoring and Reporting

Details about seedlings planted are tracked by cutblock and planting unit (PU) in Canfor's internal silviculture tracking system, Plant Wizard. It includes the species, number of trees planted, seed lot, and request key data.

Data from Plant Wizard is used to calculate the number of hectares planted with more than one species compared to the total hectares planted in a given year. The results of this monitoring will be reported in the SFMP Annual Report.

Indicator 14 – Wildlife Habitat Features

Indicator Statement	Target (Variance)
Forest management activities conform to operational plans that include the appropriate management strategies from the SWP for blocks containing sites of biological and geological significance	100% (0)

Introduction

Wildlife Habitat Features (WHF) are defined as sites that occur on the DFA, are potentially impacted by forestry planning and practices, and require special management to ensure that their habitat value is maintained. This indicator was developed to define these sites, and unique geological features, as well as outline the management and monitoring required for them.

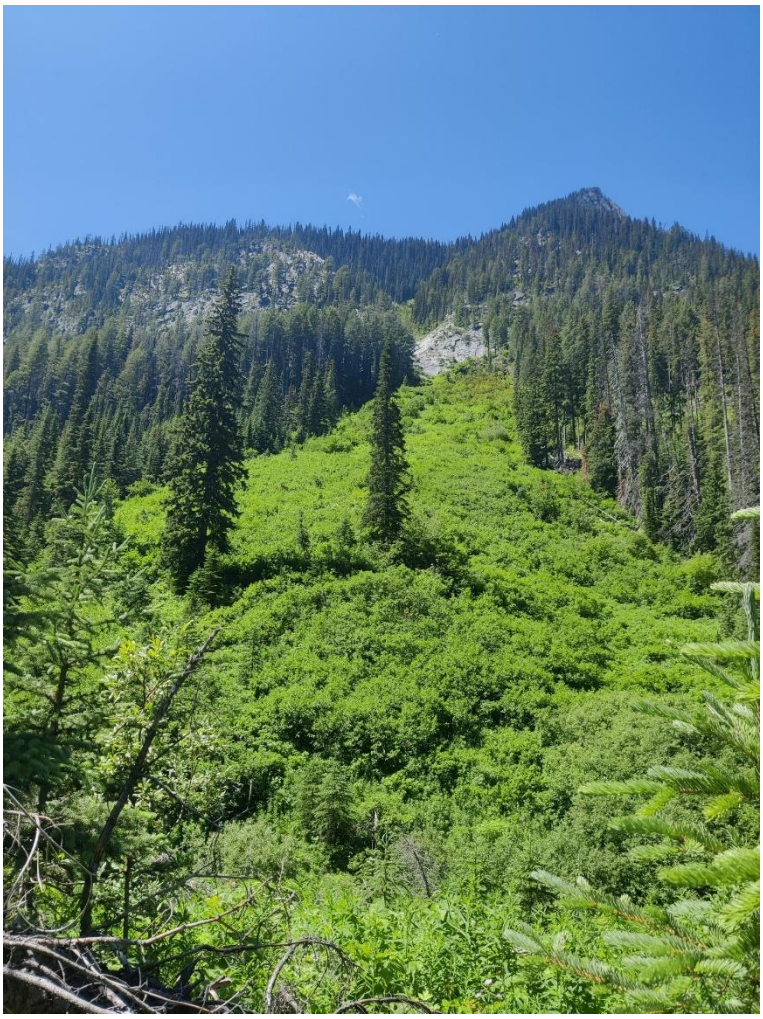


Photo: Ashleigh Harvison

Wildlife habitat features fall into one of the following categories:

- Hot or thermal springs*
- Ephemeral pools
- Raptor stick nests*
- Great Blue Heron Nests or Rookeries*
- Nests of any Red* or Blue-listed bird or Species of Management Concern
- Carnivore dens*
- Wallows*
- Ungulate licks*
- High and moderate value avalanche paths
- Bat maternity roosts and hibernaculum*
- Unique geological features such karst, tufa's, and hoodoos.

Those features marked with an asterisk (*) are currently classed as Wildlife Habitat Features under Section 11 of the Forest and Range Practices Act.

Targets

Because of the wide variety of Wildlife Habitat Features and unique geological features, each with different management strategies to protect them and maintain their function, the target was set to ensure that the management strategies for each of the WHFs were followed whenever they were encountered in the field or planning occurred around a known site.

The strategies for each WHF were developed by the Manager of Biodiversity and Wildlife, based on the best available scientific information, including guidance provided by the BC Ministry of Environment for Wildlife Habitat Features and for Wildlife Habitat Areas.

Strategy

1. The Strategic Planning Supervisor is responsible for ensuring that a definition of Wildlife Habitat Features has been developed and that these sites are identified in the SFMP.
2. This definition will be reviewed periodically in association with the proposed Wildlife Features legislation and the current list of Species at Risk and Species of Management Concern to determine if updates are required.
3. The Manager of Biodiversity and Wildlife is responsible for developing a Standard Work Procedure (SWP) outlining the forest management strategies to be applied to Wildlife Habitat Features and unique geological features when they are identified in the field. These strategies will be based on the best available science and maintain the goal that these sites are not to be damaged or rendered ineffective by forest practices.
4. The Manager of Biodiversity and Wildlife and the Strategic Planning Supervisor will review the SWP every 3 years at a minimum or as needed when monitoring indicates, to determine if changes are required in order to keep the SWP based on best-available science.
5. Annual training will be provided to contractors and Woodlands staff including information on what Wildlife Habitat and unique geological features are and what to do when they are encountered in the field.
6. Layout staff will report any WHFs to the appropriate Permitting Supervisor if found in the field.
7. Management strategies for WHFs will be included in the SFMP checklist and the block Site Plan completed by the Permitting Supervisors.
8. The Strategic Planning Supervisor will assess any blocks that contain WHFs that were harvested in the previous calendar year. The site plan and SFMP checklist will be compared against the SWP and associated management strategies for the identified WHF.
9. Any blocks that contain non-conformities to the management strategies found in the SWP will be entered into Enablon. A root cause analysis will be conducted with the appropriate staff including members from permitting and harvesting. Remedial actions will be prescribed.

10. A subset of the WHFs will be inspected in the field during the HCVA Effectiveness Monitoring program.
11. The results of this monitoring will be tracked in the SFMP Annual Report and if necessary, changes will be made to the SWP to ensure that the problem does not occur again.

Monitoring and Reporting

Monitoring will occur as identified in points 8 through 11 in the strategy noted above. The results of this monitoring will be presented in the SFMP Annual Report.

Photo: Ashleigh Harvison

Indicator 15 – High Conservation Value Areas

Indicator Statement	Target (Variance)
Forest management activities conform to operational plans that include the appropriate management strategies for HCVAs in Categories 1 to 4.	100% (- 5%)

Introduction

The Forest Stewardship Council (FSC) defines High Conservation Value Areas (HCVAs) as areas of exceptional ecological, social, or cultural significance. Their identification and management is an extremely important part of FSC certification - the entirety of Principle 9 is dedicated to. This indicator is designed to ensure that HCVAs are properly identified, that management strategies are developed to maintain or restore the values within them, these strategies are correctly implemented, and monitoring is conducted to ensure the strategies are working as intended.

Under the FSC National Standard (2018), HCVAs fall into six categories (quoted verbatim):

- HCV 1 – Species diversity. Concentrations of biological diversity including endemic species, and rare, threatened, or endangered species that are significant at global, national or regional levels.
- HCV 2 – Landscape level ecosystems and mosaics. Intact Forest Landscapes and large landscape-level ecosystems and ecosystem mosaics that are significant at global, national or regional levels, and that contain viable populations of the great majority of the naturally occurring species in natural patterns of distribution and abundance.
- HCV 3 – Ecosystems and habitats. Rare, threatened, or endangered ecosystems, habitats or refugia.
- HCV 4 – Critical ecosystem services. Basic ecosystem services in critical situations, including protection of water catchments and control of erosion of vulnerable soils and slopes.
- HCV 5 – Community needs. Sites and resources fundamental to satisfying the necessities of local communities or Indigenous Peoples (for livelihood, health, nutrition, water, etc.), identified through engagement with these communities or Indigenous Peoples.
- HCV 6 – Cultural values. Sites, resources, habitats and landscapes of global or national cultural, archaeological or historical significance, and/or of critical cultural, ecological, economic or religious/sacred importance for the traditional cultures of local communities or Indigenous Peoples, identified through engagement with these local communities or Indigenous Peoples.

The FSC National standard requires that forest managers complete an assessment to determine the presence of high conservation values on the DFA and that the resultant HCVAs be mapped. The assessment must be based on the best available information, and include independent third-party input from qualified specialists, as well as consultation with directly affected persons and Indigenous Peoples. Management strategies must then be developed to maintain the values within the HCVAs. The Standard also requires monitoring to assess the effectiveness of the strategies employed to maintain the values within HCVAs.

This indicator will address HCVA categories 1 through 4. HCVA 5 and 6 are addressed in Indicator 16.

Strategy

HCVA Assessments:

1. Canfor, under the responsibility of the Strategic Planning Supervisor and the Manager of Biodiversity and Wildlife, will complete an assessment of its operating areas in the East Kootenay for the presence of HCVAs, in a manner consistent with the current applicable FSC standard.
2. A technical advisory group (TAG) will be formed to conduct the assessment for HCVA Categories 1, 2, and 3. The TAG will be composed of representatives from Canfor, First Nations, environmental groups, and government, and will work in a collaborative fashion. Expert local scientists will be brought in as needed. The assessment will include consultation with directly affected people with relevant interests.
3. Qualified specialists will complete the assessment of HCVAs for Category 4 (water and soils management) and reviewed by the TAG.
4. Cultural Conservation Value Areas (or CCVAs) will be identified in a collaborative process with local Indigenous Peoples.
5. A peer review of each of the HCVA assessment will be completed each time an update or significant change is made, and the peer review will be made publicly available.
6. The HCVA Assessments will be made publicly available by posting them to the Canfor external website.
7. Canfor will review and update the HCVA assessment reports every 5 years or more frequently if major changes occur that impact the HCVAs. Major revisions to categories 1-3 will be completed by the Manager of Biodiversity and Wildlife and the Strategic Planning Supervisor and reviewed by the TAG. The update of the CCVAs will be done through a collaborative process with the applicable First Nations.
8. If there are significant changes to Canfor's operating area or high conservation values in between assessment report updates, the HCVA Assessment for categories 1-3 will be reviewed and, if necessary updated by the Manager of Biodiversity and Wildlife and the Strategic Planning Supervisor and reviewed by the TAG. An assessment on new operating areas for CCVAs will be completed in a collaborative fashion with local First Nations. The HCVA Category 4 assessment will be completed by a qualified specialist.

HCVA Management Strategies:

1. Management strategies will be written for each HCVA or High Conservation Value within an HCVA. The strategies will outline measures for the maintenance and/or enhancement of the high conservation values in HCVAs, consistent with the precautionary approach. Canfor's Manager of Biodiversity and Wildlife and Strategic Planning Supervisor will develop the strategies for Categories 1-3. Strategies for Category 4 will be developed by technical experts.
2. The management strategies for HCVA Categories 5 and 6 will be developed in a collaborative process with local Indigenous Peoples.
3. The management strategies will be contained in a separate document from the SFMP and are available upon request from the Strategic Planning Supervisor.

Operational Planning

1. The Planning Supervisor will identify any HCVA overlap in a proposed block and note it in the planning checklist alongside the appropriate management strategies and considerations for layout.
2. The Permitting Supervisor will ensure that the correct management strategies have been applied to the block at the layout stage. The HCVA overlap will be noted in the SFMP checklist.
3. The Permitting Supervisor will include any relevant management strategies in the block site plan to ensure that the harvesting team considers them during block scheduling and harvest.

Monitoring and Reporting

1. The Strategic Planning Supervisor will conduct an office review to assess any blocks that contain HCVAs that were harvested in the previous calendar year. The site plan and SFMP checklist will be compared against the SWP and associated management strategies for the identified HCVA.
2. Any blocks that contain non-conformities to the management strategies will be entered into Enablon. A root cause analysis will be conducted with the appropriate staff including members from the permitting and harvesting teams. Remedial actions will be prescribed.
3. Periodically, a sample of HCVAs will be inspected in the field during the HCVA Effectiveness Monitoring program. An independent contractor will review the prescriptions in the site plan against what is found in the field.
4. The results of the HCVA Effectiveness Monitoring program will be presented to the Woodlands team as part of continuous improvement. The results will also be used to review the HCVA management strategies for effectiveness. If the strategies or their operational implementation are deemed to require improvement, the strategies will be revised and/or implementation improved via training.

The results of the site plan monitoring will be tracked in the SFMP Annual Report. The results of the HCVA Effectiveness Monitoring will be presented in a report and saved in Canfor's internal system.

Photo: Gerry George

Indicator 16 – Cultural Sites and Values

Indicator Statement	Target (Variance)
Forest management activities conform with operational plans which include management strategies to manage and protect Indigenous Peoples culturally important sites, practices, and activities	100% (0)

Introduction

This indicator recognizes the importance of managing and protecting culturally important sites, practices, and activities during forestry operations. Indigenous Peoples, with the benefit of local and traditional knowledge, may provide valuable information concerning the specific location and use of these sites as well as the specific forest characteristics requiring protection or management. The outcome of these discussions and the means to manage/protect values and uses are included in operational plans. The intent of this indicator is that important cultural heritage sites are identified, managed, and/or protected through management strategies in operational plans.

Canfor and the Ktunaxa Nation identified culturally important High Conservation Value Areas (CCVAs) for all its Kootenay operating areas except for the Radium license area that was not part of the assessment at that time. Management strategies were developed for each CCVA and are now included in site specific plans.

The Shuswap Band has elected to not proceed with the CCVA process at this time but may choose to engage in the future. The relationship with the Neskonlith and Adams Lake Bands is still developing and CCVA's have not been identified as priorities by either Band.

Targets

The target of 100% compliance with operational plans is established to ensure forest areas significant to Indigenous Peoples for culturally important sites, practices, and activities are maintained to provide the same benefits to Indigenous Peoples. The target verifies that consideration was given in plans, and then follows through with assessing plan execution. A variance from this target is not considered appropriate.

Strategy

CCVA Assessments:

1. Cultural Conservation Value Areas (or CCVAs) will be identified in a collaborative process between local Indigenous Peoples and Canfor and peer-reviewed by Nation members. It is Canfor's and the Ktunaxa Nation Council's opinion that Nation members are the only qualified experts to review culturally sensitive information.
2. The CCVA Assessments will not be made publicly available due to the sensitivity of information contained within.
3. Canfor and local First Nations will review and update the CCVA assessment reports every 5 years.
4. If there are significant changes to Canfor's operating area or cultural conservation values in between assessment report updates, an assessment on new operating areas for CCVAs will be completed in a collaborative fashion with local First Nations.

CCVA Management Strategies:

1. Management strategies will be written for each CCVA. The strategies will outline measures for the maintenance and/or enhancement of the cultural value within the CCVA, consistent with the precautionary approach. Canfor's Manager of Biodiversity and Wildlife and Strategic Planning Supervisor will develop the strategies for CCVAs in collaboration with local First Nations.
2. The management strategies will be contained in a separate document from the SFMP and CCVA assessment report and is available upon request from the Strategic Planning Supervisor.
3. Nation members will review the CCVA assessment reports and management strategies. The advice and comments received through this review process will be documented and maintained by Canfor and are available upon request from the Strategic Planning Supervisor.

Operational Planning

1. The Planning Supervisor will identify any CCVA overlap in a proposed block and note it in the planning checklist alongside the appropriate management strategies and considerations for layout.
2. The Permitting Supervisor will ensure that the correct management strategies have been applied to the block at the layout stage. The HCVA overlap will be noted in the SFMP checklist.
3. The Permitting Supervisor will include any relevant management strategies in the block site plan to ensure that the harvesting team considers them during block scheduling and harvest.

Monitoring and Reporting

1. The Strategic Planning Supervisor will complete an office review of any blocks that contain CCVAs that were harvested in the previous calendar year. The site plan and SFMP checklist will be compared against the associated management strategies for the identified CCVA.
2. Any blocks that contain non-conformities to the management strategies will be entered into Enablon. A root cause analysis will be conducted with the appropriate staff including members from the permitting and harvesting teams. Remedial actions will be prescribed.
3. A CCVA Monitoring program is currently being developed with the Ktunaxa Nation Council and will involve assessing CCVAs in the field. This program is currently in the initial stages of development and no formal process has yet been identified.
4. However, it is expected that it will involve pre-harvest and post-harvest cultural value assessments of harvest areas by local ʔaknusti (land guardians). The results will then be shared with Canfor staff who will implement appropriate management strategies.

The results of the site plan monitoring will be tracked in the SFMP Annual Report.

Indicator 17 – Reforestation Success

Indicator Statement	Target (Variance)
a) Percentage of blocks that achieve regeneration delay (RG) within the regen delay period	100%
b) Percentage of blocks that achieve free growing within the free growing (FG) period	100%

Introduction

This indicator ensures that Canfor successfully regenerates all harvested areas with healthy, ecologically suitable species in a timely manner. Achieving reforestation objectives quickly is important to achieve productivity and species diversity goals. Regeneration delay ensures prompt reforestation of cutblocks. Free growing demonstrates that the species reforested with are ecologically suitable, free from insects or disease and will likely continue to grow into maturity. This indicator also provides a suggestion of site productivity which is measured by evaluating how well the trees growing are performing (health, growth, and vigour). The minimum and target standards specified in the stocking standards reflect productivity goals.

Photo: Kennedy Thomson

Forest heath is also measured with this indicator. In order for a tree to count as well-spaced or free growing, the surveyor must apply a list of health and damage criteria to ensure that the trees counted can be expected to survive for the long term. Maintaining a healthy forest is paramount to achieving stand and landscape objectives in the short and long-term. Carbon storage is maximized when stands are productive and healthy. This indicator will ensure the available growing space is utilized; all areas harvested are reforested and will contribute to achieving Canfor's carbon sequestration goals.

Targets

A target of 100% will ensure Canfor meets legal reforestation obligations and demonstrate that all harvested cutblocks are regenerated with healthy ecologically suitable species in a timely manner.

A variance is not required as this target is a legal obligation. However, a variance is built into the legislated standard by allowing standards to be updated to reflect

site limitations. If the reforestation on a cutblock is significantly setback, the applicable stocking standards are amended to reflect this and ensure compliance continues to be feasible, for example if a wildfire burns 10- year-old regenerating cutblock. The free growing period would be increased by 10 years. This reflects the provincially accepted procedure.

Strategy

1. The Planning Supervisor identifies the BEC and variant overlap during the block planning process and notes this in the planning checklist. This checklist is provided to the layout contractor.
2. Layout contractors are responsible for collecting pre-harvest cutblock data during the recce and layout phases and providing this information to the Permitting Supervisor in the block summary package.
3. The Permitting Supervisor classes the site into biogeoclimatic (BEC) zones, subzone, variant and site series and applies the appropriate stocking standards based on this classification.
4. The block is harvested.
5. A post-harvest assessment is completed by the Silviculture Supervisor immediately after harvesting is complete to verify the BEC classification and stocking standards. If the BEC is incorrect, the block is re-stratified and the site plan is amended.
6. The Silviculture Supervisor completes a sowing request for seedlings based on the results of the post-harvest assessment and any site limiting factors that have been identified (i.e., moisture regime, frost risk, rust risk). *The use of genetically modified organisms is prohibited.*
7. The Silviculture Supervisor will supervise the tree planting to ensure that it is in accordance with the planting management system (critical aspects include stock handling, planting quality, and density management) and will track the seedling and planting data through Canfor's internal silviculture tracking system, Plant Wizard.
8. A regeneration survey is completed by the Canfor Silviculture Supervisor once planting is complete and regeneration delay is declared.
9. Two years post-planting, a survival monitoring survey is completed to check the tree survival and the encroachment of natural regeneration.
10. Monitoring surveys are completed between the date that regeneration delay is declared and the predicted free growing dat. This is to monitor brush competition, forest health concerns, and tree mortality and survival.
11. Provisional on the results of the monitoring surveys, a free growing survey is completed and the block is declared free-growing in accordance with the stocking standards that were applied post-harvest.
12. The Silviculture Supervisors and the Strategic Planning Supervisor will pull the regen delay and free growing reports from Infoview and identify any regen delay or free growing stands that have not achieved obligations.
13. A percentage will be calculated from the total stands vs. the unachieved stands.
14. The results of this monitoring will be presented in the SFMP Annual Report.

Monitoring and Reporting

Cutblocks are monitored regularly after harvest with silviculture surveys. Data is collected on density, species, growth, productivity, and forest health. Using this data, treatments are implemented as required to maintain the health and productivity of the stand. Data from silviculture surveys is tracked in Canfor's Land Resource Manager.

Indicator 18 – Invasive Species

Indicator Statement	Target (Variance)
a) Percentage of prescribed treatments with no monitoring in the following year	0% (10%)
b) Percentage of blocks with identified invasive plant sites that were prescribed best management practices in the operational plan	100 (10%)

Introduction

It is widely accepted that invasive species pose a significant danger to global biodiversity and threaten environmental, social, and economic values globally and in the East Kootenays. It is important that Canfor's forestry operations do not increase the occurrence of invasive plant species to ensure forest ecosystems continue to provide quality wildlife habitat, agriculture and grazing opportunities and maintain local biodiversity.

Canfor operations are on the Crown Forest land-base that includes other tenured (i.e., range and commercial recreation) and non-tenured (i.e., recreational) users. The management of invasive plant species spans many user groups and Canfor is only one of them. The coordination of treatments and sharing of knowledge and experience across user groups is done largely through Invasive Species Councils (ISCs) which are delineated geographically along regional district boundaries. Canfor's operations include three different Invasive Species Councils: East Kootenay (EKISC), Columbia-Shuswap (CSISC), and Central-Kootenay Invasive Species Council (CKISC).

Canfor is responsible for making sure their obligations to manage invasive plant species are met in a way that is consistent with the management of invasive plant species from a broader perspective. This requires up-front (pre-development) identification of invasive plant species sites and regular communication with the respective ISCs. This will ensure Canfor addresses infestations for which it is responsible for and does it in such a way that is consistent with adjacent user groups.

Targets

Under Section 17 of the Forest Planning and Practices Regulations (FPPR), Canfor is required in their Forest Stewardship Plan (FSP) to specify measures that prevent the spread or introduction of certain invasive plant species as a result of forestry activities. Integral to this is treating Canfor sites (cutblocks and roads) with invasive plant species.

Single-event treatments of invasive plant species sites are not always sufficient; where some infestations require treatments over multiple years to eradicate all invasive plant species. Indicator 'a' requires follow-up monitoring of treated areas to ensure the treatment was successful or to schedule another treatment, if required.

In addition, treatments are more effective when carried out promptly. Indicator 'b' ensures infestations in areas that Canfor is responsible for are addressed through best management practices identified in operational plans.

The target of 0% is important to ensure Canfor's forest management activities have not resulted in an increase in invasive plant species. A 10% variance was included to recognize there are sometimes situations that are beyond Canfor's control that influence field operations (like wildfires limiting access).

Strategy

Training

1. The Strategic Planning Supervisor will ensure that training for Woodlands and contractor staff is available and up to date. This includes being consistent with FSP commitments.
2. Invasive plant training will be included in the annual spring training package for contractors with periodic workshops provided on identifying and reporting invasive plants. These workshops will be done in conjunction with local invasive plant councils (i.e., EKISC) and will be provided to both contractors and Woodlands staff.
3. Records of training for Woodlands staff will be kept in MyLearning, while records of contractor training will be kept in Canfor's spring training folders in the file explorer.

Operational Planning

1. The Planning Supervisors will identify any known invasive plant sites in the proposed block and road areas and note these in the planning checklist.
2. Layout contractors will identify any invasive plant locations during field activities. GPS coordinates will be taken and the site reported through Invasives BC.
3. A detailed summary of the identified infestations will be included in the block summary package provided to the Permitting Supervisors with recommendations on management strategies if applicable (i.e., winter harvest, staging area locations, etc.).
4. The Permitting Supervisors will use the information provided by layout contractors to identify which best management practices are appropriate for that block and infestation. These BMPs can be found in the invasive plants standard work procedure.
5. Herbicide application will be prescribed as a last resort or when other treatment options are expected to fail.
6. Monitoring and herbicide treatment activities will be entered into Land Resource Manager by the Permitting Supervisor to track invasive plant management activities. A planned start date of May 1st will be used for ease of running the scheduling query.

Strategic Planning

1. The Strategic Planning Supervisor will run an annual query in LRM to identify which blocks and roads are scheduled for monitoring and treatment.
2. The shapefiles for these areas will be saved in the appropriate year in the invasive plants folder in Canfor's file explorer. Shapefiles will be sent to the government invasive plants representative and the East Kootenay Invasive Species Council (EKISC) to ensure that the treatments are coordinated in conjunction with other land managers.
3. During the pre-work with the herbicide application contractor, a review of the FSC Pesticide Policy is required. This is to ensure that no prohibited herbicides are used on Canfor's DFA.
4. The Strategic Planning Supervisor will work with Mill Managers to ensure that mills and scales are treated for invasive plants. Mill managers are responsible for coordinating treatments.

5. The intent is to reduce and, where possible, eliminate the use of pesticides over time at these sites. However, in practice it is expected that herbicide applications will continue in the future, as there is the possibility of new introductions of invasive species and a persistent seed bank at sites. Records of treatments (mechanical and chemical) are to be maintained indefinitely, with periodic monitoring completed to evaluate levels of herbicide usage.
6. When herbicides are used for spot treatments of invasive plants, chemical pesticides that are not prohibited by FSC's Pesticide Policy will be given preference for use, applied by certified applicators and follow all legal requirements for safe storage, handling, and application of herbicides. Where infestations are significant enough or where the invasive species can only be controlled by FSC prohibited chemicals, herbicides that are on the FSC prohibited list may be used **as a last resort.**
7. The Strategic Planning Supervisor will conduct site plan quality control on an annual basis to ensure that appropriate management strategies are applied to identified infestations. A comparison will be made between the site plans for all the harvested cutblocks in the previous year to the management strategies found within the SWP. The results will be presented in the SFMP Annual Report.

Seedlings

1. The Silviculture Supervisors will provide Canfor contracted nurseries with the 'Pesticide Summary Template' and the 'FSC Pesticide Application Record and Notification Form'. Updated versions will be provided when appropriate.
2. If there is a significant failure risk to Canfor seedlings while at the nursery, it may be required to apply FSC restricted pesticides to remove the threat of damage, such as for Lygus Bug control.
3. Before the nursery can spray prohibited chemicals, a risk assessment must be completed and chemical pesticides that are not prohibited by FSC's Pesticide Policy will be considered and given preference for use, however sometimes these may not be effective in controlling the crop threat.
4. Nurseries will fill out the 'FSC Pesticide Application Record and Notification Form' before applying prohibited chemicals and send it to the Canfor Silviculture Supervisors for review and sign off.
5. Canfor Silviculture Supervisors will approve the use of prohibited chemicals only as a last resort.
6. At the end of the growing year, nurseries will complete the 'Pesticide Summary Template' and provide it to Canfor. This summarizes the total use of prohibited vs non-prohibited pesticides and will be used in an ongoing capacity to monitor pesticide use at nurseries.

Monitoring and Reporting

1. Monitoring will be conducted through invasive plant surveys and contractor assessments of infestation sites.
2. Internal site plan monitoring will be conducted as outlined under strategic planning, point 7 above.
3. The results of this monitoring will be presented in the SFMP Annual Report.

Indicator 19 – Permanent Access Structures

Indicator Statement	Target (Variance)
Percent of the operable land base converted to permanent access structures through forest management activities	≤ 5% per landscape unit

Introduction

Forest companies have limited influence on most permanent additions or deletions to the operable forest area. These are generally a result of government land use policies for other industries such as mining or urban development. Where forest companies can have an influence is through their practices, particularly as it pertains to permanent access structures (PAS) such as roads, landings and borrow pits. These PAS are essential to the process of accessing timber.

This indicator is focused on those activities where forest companies have management responsibility (i.e. excludes other permanent losses resulting from other industries sharing the overall forest estate). In addition to the loss of forest there are several other potential influences PAS can have on the forest ecosystem. These include noxious weeds, changes to wildlife movement patterns, and intensified human access. Limiting the levels of land conversion to non-forest use will have an associated positive effect on these factors while ensuring the operable forest land base is maintained.

Photo: Ashleigh Harvison

Targets

This target was established to set a limit on the conversion of operable land base to PAS, where forest managers have direct management responsibility. The legal requirement for PAS within a cutting permit is 7%. When this indicator was created, the PAG was still functional. They requested roads outside of the cutting permits and the associated impacts also be considered, therefore, the area measured was set as the operable land base and the target was set at 5%.

It should be noted this is below the legal maximums levels but aligns with PAS assumptions made in previous TSR determinations. The variance for this target was established to account for special circumstances such as roads within the operable land base that are outside the manager's control. This target feasibility was verified through examination of the current condition.

Strategy

1. The Strategic Planning Supervisor will work with the GIS Analyst to update the Permanent Access Report on an annual basis, early in the year. It will be saved in the 'Assessments' folder in Canfor's file explorer database.
2. When developing new blocks, the Planning and Permitting Supervisors will determine the level of PAS currently in the specific landscape unit from the PAS annual report. The amount of PAS proposed will be considered and planned to ensure the total remains below the 5% target. If numbers are approaching target levels, the PAS report can be re-run for that LU including proposed roads for the new development.
3. Wherever possible, permanent access structures will be designed for total chance harvesting. This means planners will look at all the timber that will be available in the area and ensure the road system works to access it all and not for one specific block. Over the long term this helps to minimize the percentage of PAS. It should be noted that the Planning and Permitting team must work with what PAS are currently on the land base, and in some cases this may not result in optimal total chance planning.
4. When accessing sites where no future timber is available, temporary roads will be considered as the primary option. This can help protect environmentally sensitive areas from increased human access as well as decreasing the impact on the THLB. All temporary access structures are to be reclaimed and this includes temporary roads and landings. Permitting Supervisors will prescribe this in the site plan.
5. Canfor will continue to work with other forest companies and overlapping industries so that road systems and borrow pits can be shared. This requires sharing of GIS layers, required road specifications, and future plans. Frequent communication with overlapping industries is achieved through ongoing relationships and Canfor's referral process.
6. If a landscape unit is at the maximum target for conversion of operable land base to PAS, the Planning Supervisor and GIS analyst will complete an analysis of the road layers in the LU to determine the accuracy. This can include photo analysis and, in some cases, on ground verification of the layer. PAS can easily be overestimated with historical road data. In some cases, sections of roads may need to be added or removed; in others, the area of the PAS may be an over or underestimate.
7. If levels exceed the maximum target for PAS, no new PAS will be added. If new permanent access is necessary, then reclamation of existing permanent access will be required to offset the new road.

Monitoring and Reporting

The Strategic Planning Supervisor, the Planning Supervisors, and the Permitting Supervisors will all monitor this indicator to ensure the targets are achieved.

The results of the annual assessment showing percentage of PAS by landscape unit will be reported in the SFMP Annual Report by the Strategic Planning Supervisor.

Indicator 20 – Volume Harvested vs. Volume Allocated

Indicator Statement	Target (Variance)
a) Percent of the volume harvested compared to the volume allocated	100% over the legislated cut control period for the major replaceable forest licenses in the Kootenay region (± 10%)
b) An FSC AAC calculation is run at least every 10 years	Completed once every 10 years

Introduction

This indicator tracks actual timber harvest and compares them to levels within the long-term capability of the forest to grow wood and provide long-term sustainable economic benefits. The amount of wood that can be produced in perpetuity from a forest is a theoretical calculation in the Timber Supply Review (TSR) that depends not only on the inherent wood-growing capacity of the forest ecosystem but also on the kinds and intensities of management inputs (e.g., silvicultural treatments).

Harvest flow objectives are driven in part from the current economic and social objectives of the Crown. In the short-term, there is often a desire by government to retain the continued availability of good forest jobs and the long-term stability of communities that rely on forests. At the same time, harvest levels in the short-term must not compromise long-term sustainability. To sustain economic benefits generated by the forest industry, fibre flow is planned and managed to provide continued economic benefits.

Cut control is a legal term that refers to a 5-year period. A cut control period is defined in the Cut Control Regulation. It is the amount of total volume a forest license holder may harvest over a given period of time. The license holder may harvest any portion of that total volume in any given year, however they must not exceed the total allowable amount of volume at the end of the cut control period or penalties and future reductions may be applied.

Since FSC goes above and beyond legal and regulatory forest management requirements, a separate Timber Supply Review must be undertaken by Canfor. This is to account for the additional management strategies that must be implemented during forest harvesting, for example HCVAs and increased riparian protection, which may affect harvest levels in some way by adding pressure to net down calculations.

Targets

Targets are established by the Forest Act, regulations, and forest license documents. The allocated harvest level is developed with input from stakeholders, the broader public, Indigenous Peoples, the forest industry, and government agencies. The Government Chief Forester determines the AAC for each TSA based on analysis and their recommendations. The actual AAC is outside of the direct control of forest licensees, however it is important to track AAC levels over time as many indicators and targets are directly related to AAC.

Only Canfor's replaceable major licenses are included in this target. The AAC is recalculated every 10 years and is based on the Timber Supply Review (TSR) process. The variance of + 10% represents the variance licensees are allowed in legislation before a financial penalty is applied.

The secondary TSR that Canfor completes internally will be used as a 'pulse check' to ensure that the government determined AAC levels do not exceed those which are deemed 'sustainable' when FSC constraints are included.

Strategy

1. The Canfor Kootenay management team will work with the mills to come up with an annual plan detailing the level of volume required in that calendar year to meet cut control targets.
2. The Planning and Permitting team will ensure volume it developed and submitted to the government to provide the mills with fibre that will meet their inventory and portfolio requirements.
3. As available annual quota volumes are not sufficient to meet mill consumption, purchase wood will supplement deliveries to ensure adequate fibre supply to the mills. Purchase wood will meet the Chain of Custody requirements.
4. The Woodlands Accountant will track cut control for each forest license in Canfor's DFA through a master tracking spreadsheet, updating as required.
5. The Strategic Planning Supervisor will report on the data in this tracking spreadsheet in the SFMP Annual Report. It will be calculated as an average over the five-year cut control period.
6. If there are significant issues with cut control levels, an action plan will be developed by the management team in order to address the root cause and bring licenses back in line with the designated targets.
7. The Strategic Planning Supervisor will ensure that an FSC TSR is completed at least every 10 years in order to ensure that the government allocated cut levels do not exceed sustainable levels on Canfor's DFA.

Monitoring and Reporting

The results of the monitoring outlined in point 5 in the strategy above will be presented in the SFMP Annual Report. A separate report will be developed for the FSC TSR every 10 years, or more frequently as required.

Photo: Geordie Driscoll

Indicator 21 – Detrimental Soil Disturbance

Indicator Statement	Target (Variance)
Number of standard units where the percentage of detrimental soil disturbance exceeds the acceptable limits	0 (4)

Introduction

Soil is one of the most important physical resources in the DFA, as it is directly linked to the production of forest biomass through its associated attributes. The intent of this indicator is to ensure the levels of soil disturbance caused by forestry activities do not exceed acceptable levels, thereby protecting soils' ability to sustain a healthy, and productive forest ecosystem.

Acceptable detrimental soil disturbance is defined in legislation as: *5% or less on sensitive soils and 10% or less on regular soils*. These levels can be temporarily exceeded by 5%. Within a roadside area, which reduces the need for landings, a 25%-or-less limit is applied.

Detrimental soil disturbance is defined as "*disturbance caused by a forest practice on an area, including: areas occupied by excavated or bladed trails (greater than 30cm cut), temporary roads and landings, areas occupied by corduroyed trails, compacted areas, and areas of dispersed disturbance."*

A major factor in the risk of detrimental soil disturbance is related to soil sensitivity. Soil sensitivity is largely based on soil type, depth of soil, slope, and percent coarse fragments. Field analysis uses these to measure a site's risk for soil compaction, displacement, and erosion that in turn is used to determine the presence or absence of sensitive soils. Some degree of soil disturbance is expected during timber harvesting or silviculture activities, however it needs to be minimized.

Photo: Henning Barth

Targets

The target of zero blocks exceeding the detrimental soil disturbance limits was set to maintain compliance with BC legislative requirements. The variance of 4 blocks is to account for incidents where soil disturbance has temporarily exceeded the allowable disturbance limits. It is Canfor's intention to avoid these incidents, however in some cases issues causing soil disturbance are not caught on time to prevent exceeding acceptable limits. In these incidents, the blocks will be remediated to below acceptable limits within 1 year. The variance was based on a review of past incidences related to detrimental soil disturbance issues within the DFA.

Strategy

1. Canfor's layout contractors will collect soil information to determine soil sensitivity during SP data collection and under the supervision of the Permitting Supervisor. Field cards will be collected using Survey123 and will be stored in the online GeoHub database.
2. The Permitting Supervisor will determine whether the cutblock or standard unit (SU) has sensitive soils based on the field information. Acceptable detrimental soil disturbance limits will be entered into site plans (5% for sensitive soils; all others are 10%. Roadside harvest areas have a limit of 25%).
3. Soil disturbance limits from step 2 will be adhered to by harvesting contractors and monitored by the Harvesting Supervisors. In block soil disturbance levels can be exceeded temporarily by 5% but must be rehabilitated within 1 year of harvest.
4. During harvest supervision, Operations staff will enter the soil disturbance survey activity in Land Resource Manager if there are concerns over soil disturbance due to any unforeseen conditions (e.g., a heavy rain event).
5. To prevent soil disturbance, logging and road building contractors will follow wet weather shutdown protocols and the Soil Disturbance SWP during all operations. Additionally, if excessive soil disturbance is occurring, Operations or any other Contractors are responsible to stop the associated activity and contact the respective Supervisor to assess the area. The supervisor will determine the best course of action to avoid further soil disturbance.
6. At harvest completion, the Harvesting Contractors will do an ocular estimate of all cutblocks. Any that are close to the target limits from the site plan will be flagged for an on-ground soil disturbance survey. The harvesting supervisor will enter the soil disturbance survey activity in LRM. Results on these ocular estimates will be recorded on the contractor's post-harvest checklist and as comments in the activity in LRM.
7. The Strategic Planning Supervisor and the Harvesting Supervisors will ensure trained consultants complete soil disturbance surveys annually.
8. Sites chosen for Soil Disturbance Surveys will be determined through analysis of the Soil Disturbance Risk Report which considers soil sensitivity, slopes of conventional harvest units, and harvest season. A minimum of 25% of high-risk sites and 20% of OR/OF blocks will be surveyed annually.
9. If at any time post-harvest, any Canfor staff member or consultant suspects an area of excessive soil disturbance, they will inform the Strategic Planning Supervisor who will ensure a Soil Disturbance Survey is completed by a trained consultant.

10. The Strategic Planning Supervisor will complete an analysis of all the SUs that were surveyed and enter any incidences of excessive soil disturbance into Enablon. A root cause analysis will be conducted and remedial actions will be prescribed (i.e., reclamation of trails).
11. Soil Disturbance Surveys will be stored in the 'Soil Disturbance' folder in Canfor's file explorer.
12. Reclamation – All temporary access structures and unplanned detrimental soil disturbance are to be reclaimed. This includes temporary roads and skid trails with a greater than 30cm cut. All reclamation must be done under dry soil conditions, or it has the potential to further disturb/compact soils.
13. In the event that Canfor exceeds the detrimental soil disturbance targets, Canfor will rehabilitate areas of soil disturbance to bring the site into compliance within 1 year.
14. The Strategic Planning Supervisor will report the results of the annual survey program in the SFMP Annual Report.

Monitoring and Reporting

Annual soil disturbance surveys are completed by contractors on the highest-risk sites. These same surveys will be done when a block is suspected of exceeding targets based on the ocular estimates completed by operations contractors or reported by any staff onsite.

Enablon records for any incidents of excessive detrimental soil disturbance occurrences will be reported in the SFMP Annual Report. The list of high-risk blocks and the results of the associated surveys can also be provided as supporting information.

Indicator 22 – Coarse Woody Debris

Indicator Statement	Target (Variance)
All block site plans contain appropriate management strategies to achieve the targets for large CWD as per **Table 24**	100% (20%)

Introduction

Coarse woody debris (CWD) refers to dead wood lying on or above the ground that is at least 7.5 cm in diameter (wood that is smaller than this is referred to as 'fine woody debris'). This indicator refers only to large CWD, which is defined here as dead wood > 20 cm in diameter and > 10 m long, which does not meet the current Canfor sawlog log quality requirements. Large logs last longer, hold more moisture, contribute more organic material to the soil, and provide habitat for a greater number of species than do smaller logs (Densmore 2010).

This indicator focuses on the density of large CWD rather than the volume of all sizes of CWD for the following reasons:

1. It is easier for loggers to influence the number of large pieces remaining after harvest than the number of small pieces.
2. The density of large pieces is much easier to estimate during harvest than volume, making it easier for loggers to determine if they are following targets as they harvest the block.
3. Larger pieces of CWD provide different and longer-lasting ecological functions than smaller pieces.

Ecologically, CWD fulfills many critical ecological roles in forested ecosystems. Among them, it provides a source of organic material for soil development and is critical for soil function, structure, and productivity. CWD also provides substrate, energy and nutrients for plants, lichen, fungi, and bryophytes, and shade and protection from browsing for tree seedlings. In addition to this indicator, Canfor also has special procedures such as not burning all slash piles, and leaving windrows of woody debris across blocks that meet particular criteria, in order to provide additional habitat for furbearing species such as marten and weasel. These procedures are outlined in the CWD SWP.

Targets

Due to the many ecological processes that CWD influences and the long period of time that large pieces of CWD can take to decompose, there are several different ways in which targets for CWD in harvested areas could be set. For the purpose of this indicator, targets were set using data from unmanaged stands that recently followed natural disturbance patterns such as wildfire and blowdown. This method assumes that the closer forestry practices can maintain the patterns and processes associated with natural disturbances, the greater degree to which biodiversity will be maintained. Data from mature, unmanaged stands was also used in the target identification. This method ignores the fact that harvesting is a disturbance in the same sense that wildfire is a disturbance, and that a stand of age 0 would not ecologically be expected to have the same CWD as a stand of age 100.

The variances of 20% in each part of the indicator allows for natural disturbance, such as fire, removing the majority of large CWD from the block before harvest, thereby making it difficult to prescribe if it is not present.

Table 24. Targets for large coarse woody debris within cutblocks across different BEC zones found within the Kootenay DFA

	BEC Zones					
	IDFxx2	IDF (excluding IDFxx2)	MS and ICH Pl leading stands	MS and ICH Non-Pl leading stands	ESSF Pl leading stands	ESSF Non-Pl leading stands
Target Pieces per hectare	1	2	2	4	8	10

*Note: these targets do not apply to blocks within wildfire risk reduction areas.

Strategy

Landscape/Strategic Level

1. In addition to the actual CWD retained on the ground within harvested blocks, CWD will be recruited for the future by leaving variable numbers and species of live trees, including deciduous trees, and stub snags within conventionally harvested portions of cutblocks, with allowances for safety, and harvesting and road logistics.
2. Wildlife Tree Patches (WTP), Riparian Reserves, and other Reserves will be established around high value biodiversity features including areas with large CWD, large amounts of CWD (e.g., blowdown areas, unless these are being salvaged), and high value wildlife trees, which will recruit into large CWD through time.
3. Areas burned by wildfire will have some places left unsalvaged to capture areas with high densities of fire-killed snags and CWD. WTPs will also be established within wildfires in order to reserve places with high densities of fire-killed trees and mixtures of dead and live trees, which are often highly valuable for wildlife.

Operational Planning

1. Layout crews will collect data on the density of large CWD in pre-harvest stands, as per the methods outlined in the CWD SWP and fill in the pre-harvest CWD density form.
2. The CWD form will be stored in the block folder for record keeping.
3. Permitting Foresters shall ensure that the appropriate CWD targets are prescribed for each block within the DFA, by BEC zone. The pre-harvest large CWD density for that block, if available, shall be added to the Site Plan as well. If this density is lower than the target for the block, the Permitting Forester will note this in the Site Plan, together with wording to the effect that that the target may not be attainable, and that strong efforts must be made to retain existing CWD on site, and that existing CWD including dead larch, must not be removed from the site.
4. The only exception to CWD targets will be blocks within community fire interface zones (within 2 km of communities), which should have a minimum level of CWD prescribed, i.e., harvesting should try to leave little to no CWD to reduce the fire hazard.
5. Permitting Foresters shall ensure that all cutblocks within the specified areas for Grizzly Bear (WHA 4-180) have CWD volume requirements prescribed (minimum 20-40 m3/ha), as well as the large CWD density targets. The volume requirement is a legal requirement associated with the WHA.
6. Cutblocks within the specified areas for Grizzly Bear (WHA 4-180) or in Grizzly Bear HCVAs shall have it prescribed in the Site Plan that removal of dead larch (standing or down) from the block is not acceptable.

7. Cutblocks that are large (> 100 ha) and have little structure left within them (e.g., few WTP, riparian reserves or residual live trees), are in furbearer habitat, are in areas where extensive logging has or will occur and are in areas where trappers have concerns, shall be considered by Permitting Foresters for retention of some slash-piles rather than burning and for windrow retention within the block. These practices should be prescribed in the Site Plan where legal and practicable. Detailed information on how to implement these practices is available in the CWD brochure.
8. Operations Supervisors shall review the CWD targets in the Site Plan with logging crews during pre-works, as well as the methods by which they can be attained on that particular block.
9. Operations Supervisors shall review methods with loggers to assess their CWD target attainment as progress logging the block. Visual estimates can be used to determine if the block is meeting the target or not, and therefore determine if practices need to be adjusted.
10. If, during or after harvest, Harvesting Supervisors note excessive amounts of large CWD brought into roadside, and/or targets not being achieved in multiple blocks by the same contractor, this will be entered into Enablon and the root cause investigated and actions taken to that the situation does not occur again.

Monitoring and Reporting

On an annul basis, the Strategic Planning Supervisor will complete a Site Plan analysis for every block harvested within the last year to ensure that CWD management strategies and targets have been applied to every block where appropriate. Any non-conformaties to targets and management strategies will be entered into Enablon where a root cause analysis will be conducted and remedial actions prescribed to ensure the error does not occur again.

The results of this annual monitoring will be presented in the SFMP Annual Report.

Indicator 23 – Watersheds

Indicator Statement	Target (Variance)
The percentage of blocks that overlapped sensitive watersheds above ECA thresholds that have had further assessment by a qualified professional	100% (-10%)

Introduction

Water quality and quantity are important for human use and consumption, as well as being necessary for the survival of aquatic species. These primary watershed characteristics can be affected by stand-replacing disturbances (human and natural-caused). The effects are normally highest in the initial post-disturbance years and diminish over time as regenerating forest cover is established.

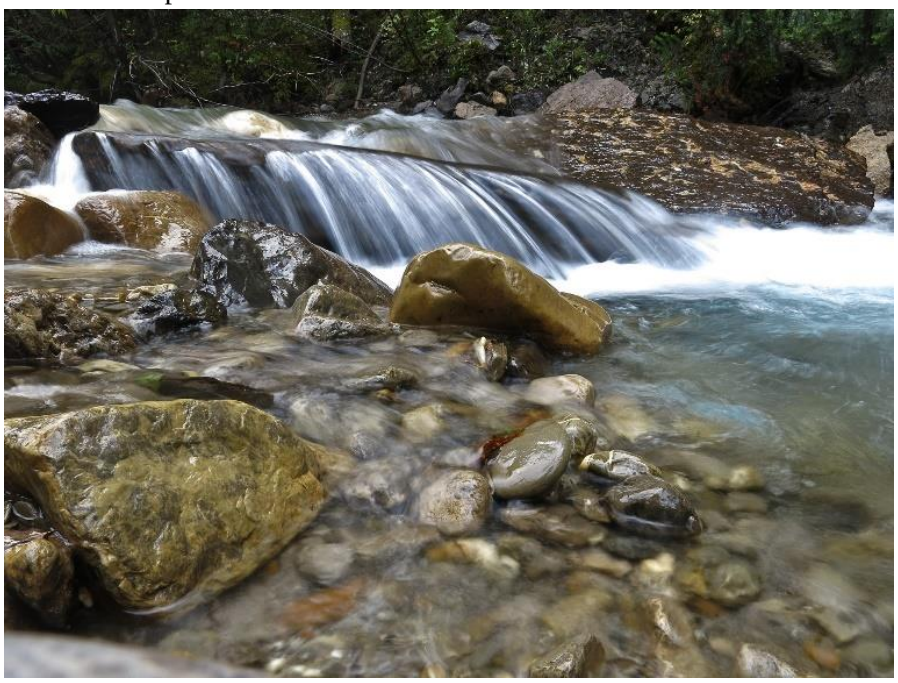
The critical threshold at which the disturbance begins to affect water values varies according to topography, soil properties, vegetation types, and climate. Certain watersheds can be classified as more sensitive to the impacts of disturbance either because of their environmental and climatic attributes or because of their inherent value to aquatic life and communities that are dependent on the water. The peak flow of a watershed is directly influenced by the amount of area that is recently harvested or otherwise recently disturbed (Equivalent Clear-cut Area (ECA)). These disturbed areas accumulate more snow and subsequently can deliver more water as the snow melts more rapidly in the spring.

For the purpose of this indicator, a sensitive watershed is defined as the following:

1. A community watershed
2. A domestic watershed
3. HCVA hydrology polygon

A Professional Hydrologist analysed the watersheds within the DFA to determine which ones should be considered sensitive. This was based on watershed characteristics, downstream values, and risks associated with forest development.

Photo: Gerry George



This indicator takes a measure of watersheds within the DFA that have been identified as sensitive. Any harvest activity that is planned and will exceed the sensitive watersheds ECA threshold will require a more detailed assessment that will evaluate the risk associated with increasing ECA, the associated potential impacts, and provide recommendations to mitigate that risk/potential impacts.

For areas not in sensitive watersheds, this indicator addresses larger watersheds defined as Riparian Assessment Units (RAU), the boundaries of which were defined by a professional hydrologist. RAUs overlap the entire DFA and therefore all sensitive watersheds are included within an RAU. In the case of both watersheds requiring a watershed assessment, the sensitive watershed will supersede the analysis of the RAU as the analysis and recommendations are more intensive. Using RAUs assures Canfor 100% coverage of the FSC DFA. For RAUs exceeding 25% ECA, a hydrological assessment will be done identifying areas of high sensitivity to disturbance and outlining mitigative measures for operations within that RAU.

Managing ECA levels and adhering to the strategies outlined in specific watershed assessments should not be expected to eliminate the potential or magnitude of naturally occurring extreme events (e.g., flooding). However, it will provide Canfor staff with the information necessary to make decisions regarding development in these areas.

Strategy

1. When planning and permitting harvest areas, the Planning/Permitting Supervisors will examine the latest RAU ECA report and map to ensure it is up to date.
2. The Strategic Planning Supervisor will have the GIS Analyst run the RAU ECAs in spring every year, however these can be run more frequently if required (i.e., after a significant wildfire).
3. The Planning/Permitting Supervisors will work collaboratively and determine what type of watershed assessment is required from a qualified professional – this could range from a brief memo to a full in-depth assessment.
4. The Planning and Permitting Supervisors requesting the information will maintain the watershed tracking spreadsheet. All new information must be entered in this spreadsheet.
5. Watershed assessments will provide forest managers with information regarding the hydro-geomorphological condition of the watershed and recommendations to minimize the risk of development related impacts to hydro-geomorphic function.
6. After the watershed assessment is complete, if blocks can be made available, the Permitting Supervisors will incorporate mitigation strategies and recommendations from the assessment into the layout design and site plan for the development.
7. Operations Supervisors will ensure strategies from the site plan are understood and followed by harvesting and road-building contractors. This will be done during the cut block prework phase.
8. Post-harvest assessments will ensure compliance with the strategies outlined in the site plan.
9. The Strategic Planning Supervisor will complete an annual assessment of all the blocks that overlap high sensitivity polygons and ensure that an assessment was completed prior to harvesting.
10. Any non-conformance with the hydrological guidelines included in site plans will be entered into Enablon. A root cause analysis will be conducted and remedial actions prescribed.

Monitoring and Reporting

Monitoring will be conducted as described in points 8 and 9 of the strategy outlined above. The results will be presented in the SFMP Annual Report.

Indicator 24 – Operational Sedimentation Control

Indicator Statement	Target (Variance)
a) All bridges scheduled for an inspection have the inspection completed within the required timeframe	100% (-20%)
b) The number of incidences of significant sedimentation that were not treated and remediated within 1 year of identification	0 (3)

Introduction

Forestry road bridges are an integral part of access to merchantable timber and help to protect the integrity of natural forest hydrological systems. Due to their proximity to streams and the installation and maintenance requirements, they also have the highest potential for sediment delivery of any forestry infrastructure. Proper installation, maintenance and monitoring of these structures are critical to the sustainability of many hydrological values. Additional structures commonly used for stream crossings include open bottom culverts, culverts, and skid bridges which can all result in significant sedimentation into creeks and streams. Additionally, crossings may have associated drainage control structures such as cross ditches, water bars, silt fences, sediment socks, and settling pools. In general, steps are taken on all stream-crossing structures to minimize the risk of sediment delivery into watercourses as per Canfor's erosion control BMPs.

It is recognized that all drainage structures require some amount of monitoring and maintenance, however most low risk streams can be covered by regular road maintenance. Some sedimentation may occur at the time of installation and during the initial settling of a structure, however this indicator focuses on the prevention of chronic long-term or significant sediment delivery to high-risk streams.

For the purpose of this indicator, **significant sedimentation** refers to any source of sedimentation that has the potential for chronic, long-term delivery into a stream system. It is largely dependent on the ditch line grade and soil type in the area surrounding the crossing.

Targets

It is vital that all bridges that Canfor are using have routine inspections completed by a qualified resource professional (QRP). This is to ensure that the structure is not contributing to significant sedimentation into a waterbody, in addition to assessing if the bridge is structurally sound and does not jeopardize the health and safety of forestry personnel. Therefore, it is reasonable to set the target for part a) as 100%, however a 20% variance has been prescribed in case access restrictions prevent inspections (i.e., road closures for fires).

Part b) of this indicator has a target of 0 as Canfor will continually strive to treat sources of significant sedimentation. However, it is understood that outside influences such as weather, timing, and availability of machinery may play a role in the ability to remediate sources, therefore a variance of three incidences has been prescribed.

Strategy

Crossing design:

Characteristics of crossings design such as location, slope grade, and the size of the structure can affect the risk of creating sedimentation sources.

1. Layout consultants will identify streams and associated bridge locations and provide this information to the Permitting forester. Stream cards and field maps are stored on the block files.
2. During the layout phase of roads that cross high value streams field crews will, to the extent practicable, flatten out the grade in and out of the crossing location in order to avoid creating long unbroken runoff zones.
3. The Permitting Forester schedules the bridge design. A qualified engineer designs all bridges and most crossings of fish bearing creeks.
4. When permitting existing non-status roads, evaluation of the existing crossings must use the same diligence as with new crossings. If crossings are deemed a significant risk, then the same process that applies to new roads will be followed.

Installation:

Some temporary sedimentation is inevitable during the installation of bridge structures. The key during installation is to minimize sedimentation and ensure no long-term sediment sources are created.

1. Operations Supervisors will review the engineered design plan with contractors during the road building pre-works.
2. If applicable, the engineer or a qualified representative is on site during installation to oversee the stream crossing engineered design plan. This ensures the engineered plan is understood and properly executed.
3. Contractors follow the plan as well as employ sediment and erosion control BMPs. Training on erosion control and sedimentation is provided during annual spring training with Canfor Supervisors and subject matter experts.

Inspection

1. At the time of installation or removal, the engineer or qualified representative inspects crossings for potential sediment sources. Inspections are tracked in Land Resource Manager.
2. Post-harvest, the Harvesting Contractors will review the high-risk crossings and communicate any potential sediment sources to the Operations Supervisors and report it through Enablon. If none are found, it will be documented on the post-harvest checklist.
3. During silviculture activities (planting and surveying), silviculture contractors will notify the Silviculture Supervisors of any potential sediment sources. This ensures crossings are inspected several times in the 1 to 5 years post-harvest period.
4. It is the responsibility of all Canfor staff and contractors to report issues of sedimentation if identified in the field. Instances should be reported and tracked through Enablon where a root cause analysis should be completed, and remedial actions prescribed.
5. Bridge inspections should be entered as a road activity in Land Resource Manager with the date and person responsible.

Monitoring and Reporting

1. Operations Supervisors will monitor when bridges are due for an inspection and schedule it with an appropriate QRP. Inspections will be tracked in Land Resource Manager.
2. Instances of significant sedimentation are reported through Enablon where a root cause analysis will be completed and remedial actions prescribed.
3. The Strategic Planning Supervisor will report the number of bridges that were not inspected within the required timeline and the number of significant sedimentation instances not remediated in the SFMP Annual Report every year.

Indicator 25 – Climate Change Adaptation

Indicator Statement	Target (Variance)
a) Annual review and, where necessary, revision of the Canfor Kootenay Climate Change Vulnerability Assessment (CCVA) Phase 2 Table 1 and Phase 3 Table 1	Annual Review
b) Percentage of TSAs and TFLs that are consistent with the *Chief Foresters' Standards for Seed Use* in Canfor's annual planting program (95% compliance and 5% variance)	100%

Introduction

The climate in British Columbia is changing. In the Canadian portion of the Columbia River Basin, which includes the DFA, historical records from weather stations across the Basin indicate that over the 20th Century (1901 – 2004), the average recorded annual temperature has increased by 0.7°C to 1.7°C.

It is important to note that climate change is dynamic, with a broad range of potential impacts. No person, organization, nor climate model can accurately predict what will or won't happen. Instead, climate models can provide a possible scenario of future climate-related variables.

Table 12 in the CCVA presents data associated with various climate-related variables over time for the region of interest. The ClimateNA_v7.31 model was used using 13 GCMs with the SSP585 scenario (Wang et al., 2016) (Mahony et al., 2022). See the CCVA report for more details.

Together, these data create a picture of historical trends and climate norms, as well as predicted future climate scenarios over 20-year time periods until the end of the 21st Century. These projected changes in climate are expected to result in a wide range of effects on the natural environment (

Mechanism	Potential Impacts	Potential Forestry Responses
Climate Change: Increased Frequency and Magnitude of Extreme Events		
Windstorms	▪ Increased windthrow ▪ Increased dispersal of bark beetle ▪ Increased fuel loading from deadfall	▪ Increased use of RMZ to windfirm RRZ ▪ Increased use of clumps and patches of residual trees rather than single leave trees in cutblocks
Freeze/Thaw Cycles	▪ Winter thaws and late spring frosts ▪ Shorter access season where winter access requires frozen roads	▪ Modified timing of planting or harvesting ▪ More flexible harvest schedule
High Intensity Precipitation	▪ Increased flooding, surface erosion, landslides, and debris flows ▪ Increased lightning, increased fire risk ▪ Reduced water quality	▪ Utilize larger culverts at high-risk crossings ▪ Refine road construction, maintenance, and deactivation

Rain on Snow or Rain on Frozen Ground	▪ Increased runoff (ground less permeable) ▪ Increased occurrence of landslides, mass-wasting of hill slopes, damage to riverbanks and downstream flooding ▪ Changing avalanche activity (decreases in some areas, increases in others)	practices to accommodate changing stream flows, especially peak flows
Heat Waves/Droughts	▪ Increased plant stress, leading to slow growth, increased mortality, and increased disease/pest susceptibility ▪ Increased fire risk ▪ Regeneration failures at lower elevations ▪ Drier soils later in the growing season	▪ Plant drought tolerant species ▪ Conserve forest floor organics ▪ Retain large CWD to help conserve moisture and provide shade for seedlings
Climate Change: Increased Variability		
Fire	▪ More extreme fire behaviour with intense, stand-replacing fires that result in destruction of vegetation and significant soil damage ▪ Increase in opportunities for invasive species, grasses, and shrubs to colonize or re-colonize a previously forested area ▪ Loss of mature timber and plantations to fire ▪ Increase in proportion of younger stands	▪ Manage for fire breaks, incorporate prescribed burning to reduce wildfire intensity ▪ Manage noxious weeds – do not allow them to establish in previously clean areas ▪ Prescribe more partial cutting to improve fire resistance of stands
Insects/Disease	▪ Higher temperatures leading to increase in length of transmission cycle of diseases, range expansion ▪ Decreased winter die-off of beetles ▪ Increased in Mountain Pine beetle, dothistroma needle blight ▪ Loss of mature timber and plantations to pests and an increase in the proportion of younger stands	▪ Salvage harvesting ▪ Improve the monitoring of and response to disturbance agents ▪ Reforest with mixed species that meet climate-based seed transfer guidelines.

Table *25*). Warmer, wetter winters and hotter, drier summers will accelerate glacial retreat, alter stream flows, promote insect and disease outbreaks, and increase the length of the wildfire season, as well as likely increase the intensity and extent of wildfires.

Changes in temperature and precipitation will also influence biodiversity within the region, as the potential ranges of species will move northward and upward in elevation. Additionally, some species will expand their ranges as conditions become more favourable, while others will be intolerant of new conditions and see a decrease in their range. These changes could lead to shifts in the distribution of biogeoclimatic (BEC) variants within the DFA, as well as to the development of entirely new BEC variants as plant species reorganize themselves into new communities.

Table 25. Summary of potential impacts of climate change on forests in the DFA and potential responses that could be implemented

Mechanism	Potential Impacts	Potential Forestry Responses
Climate Change: Increased Frequency and Magnitude of Extreme Events		
Windstorms	▪ Increased windthrow ▪ Increased dispersal of bark beetle ▪ Increased fuel loading from deadfall	▪ Increased use of RMZ to windfirm RRZ ▪ Increased use of clumps and patches of residual trees rather than single leave trees in cutblocks
Freeze/Thaw Cycles	▪ Winter thaws and late spring frosts ▪ Shorter access season where winter access requires frozen roads	▪ Modified timing of planting or harvesting ▪ More flexible harvest schedule
High Intensity Precipitation	▪ Increased flooding, surface erosion, landslides, and debris flows ▪ Increased lightning, increased fire risk ▪ Reduced water quality	▪ Utilize larger culverts at high-risk crossings ▪ Refine road construction, maintenance, and deactivation practices to accommodate changing stream flows, especially peak flows
Rain on Snow or Rain on Frozen Ground	▪ Increased runoff (ground less permeable) ▪ Increased occurrence of landslides, mass-wasting of hill slopes, damage to riverbanks and downstream flooding ▪ Changing avalanche activity (decreases in some areas, increases in others)	
Heat Waves/Droughts	▪ Increased plant stress, leading to slow growth, increased mortality, and increased disease/pest susceptibility ▪ Increased fire risk ▪ Regeneration failures at lower elevations ▪ Drier soils later in the growing season	▪ Plant drought tolerant species ▪ Conserve forest floor organics ▪ Retain large CWD to help conserve moisture and provide shade for seedlings
Climate Change: Increased Variability		
Fire	▪ More extreme fire behaviour with intense, stand-replacing fires that result in destruction of vegetation and significant soil damage ▪ Increase in opportunities for invasive species, grasses, and shrubs to colonize or re-colonize a previously forested area ▪ Loss of mature timber and plantations to fire ▪ Increase in proportion of younger stands	▪ Manage for fire breaks, incorporate prescribed burning to reduce wildfire intensity ▪ Manage noxious weeds – do not allow them to establish in previously clean areas ▪ Prescribe more partial cutting to improve fire resistance of stands
Insects/Disease	▪ Higher temperatures leading to increase in length of transmission cycle of diseases, range expansion ▪ Decreased winter die-off of beetles ▪ Increased in Mountain Pine beetle, dothistroma needle blight ▪ Loss of mature timber and plantations to pests and an increase in the proportion of younger stands	▪ Salvage harvesting ▪ Improve the monitoring of and response to disturbance agents ▪ Reforest with mixed species that meet climate-based seed transfer guidelines.

Climate Change: Shift to Warmer, Drier Summers, and Warmer, Wetter Winters		
Shifting Tree Species and Climate Envelopes	▪ Northward and upslope increase in potential range of species, expansion into alpine habitats where soil conditions are suitable ▪ Increase in suitable habitat for Fdi ▪ Decrease in suitable habitat for Sx, Se, and Sw ▪ Increase in favourable conditions for deciduous trees ▪ Increase in favourable conditions for invasive species, or species more suited to changing climate ▪ Increased in vulnerability of Pa and La ▪ Decrease in Cw	▪ Implement climate-based seed transfer guidelines to promote assisted migration of climate adapted species seedlots ▪ Plant Fdi in suitable sites ▪ Where appropriate, accept deciduous species in the stocking standards ▪ More invasive species control ▪ Plant blister-rust resistant Pa seedlings in blocks where dead or dying Pa was harvested
Shifting Ecosystem Climate Envelopes[1]	▪ Replacement of MS by ICH and IDF BEC zones ▪ ICH range projected to increase by 200% by 2085 ▪ Loss of ESSF ▪ Loss of habitat for alpine ecosystems, decrease in alpine species due to limited range ▪ Loss of forests in valleys and drier sites ▪ Increase in grasslands in valley bottoms and contiguous lower slopes ▪ Decrease in forest encroachment ▪ Loss of wetlands in low elevation valleys	▪ Implement climate-based seed transfer guidelines to promote assisted migration of climate adapted species seedlots ▪ Monitor changes in BEC, prescribe stocking standards appropriate to the revised BEC zone. ▪ Reconsider use of clearcut silviculture systems when harvesting open forest stands on dry sites, in favour of partial cutting or uneven-aged systems ▪ Continue to protect wetlands from timber harvesting.
Changing Productivity	▪ Slower growth or declines in species that require prolonged cold to break dormancy ▪ Decreased productivity of forests in warmer and drier areas ▪ Increased productivity in mid- elevation forests	▪ Changes in rotation ages ▪ Implement climate-based seed transfer guidelines to promote assisted migration of climate adapted species seedlots
Decreased Snowpack, Decreased Snowfall in Spring and Fall at Low Elevations	▪ Earlier snowmelt, reduced overall streamflow, and longer low flow periods, warmer water ▪ Earlier freshet and advancement of peak spring run-off dates ▪ Faster and higher streamflow's in winter with increasing rain ▪ Initial improvements in regeneration in higher elevation forests ▪ Increase in fire season length (38 – 52 days) ▪ Increase in area burned with increase in warm and dry conditions	▪ Retain riparian buffers with adequate shading to streams ▪ Increase dispersed retention on cutblocks to increase shading and delay of snowmelt. ▪ Manage within ECA levels ▪ Employ culverts of larger diameters on streams likely to experience higher streamflow's ▪ Implement forest fire fuel reduction techniques (increased utilization, stand thinning, prescribed burning, etc.)
Retreating Glaciers	▪ Loss of cold-water sources in summer and fall ▪ Reduction in late summer stream flows	▪ Maintain shade cover along temperature sensitive streams.
Growing Degree Days[2]	▪ Expected to increase ▪ Longer growing season	▪ Adjust timing of planting programs to maximise planting window
Wildlife	▪ Ungulate populations may be affected by changes in forests and grasslands ▪ Migratory species may have earlier spring migrations and delayed fall migrations, and extension of breeding season	▪ Adhere to general wildlife measures established for key wildlife species by the Ministry of Forests
Flowering Plants	▪ Advanced budburst and flowering	

[1] Climate envelope is the area of suitable climate for a species or ecosystem in terms of temperature and precipitation.

[2]Growing degree-days: A measure of heat accumulation over a season; used to determine when crops will reach maturity or the timing of leaf expansion.

The 2024 Climate Change Vulnerability Assessment completed for Canfor's Kootenay Operations identifies an inventory of adaptations, noting those currently implemented and those feasible for implementation. See the Kootenay CCVA Phase 3 report.

Targets

Developing quantitative indicators and targets for climate change is very difficult, given the current level of uncertainty around the specific changes that will happen in the East Kootenay region. Although general patterns are becoming evident, there is still a great deal unknown about local patterns and species response, particularly on any given site. This does not negate the need for a response from the forest industry however, since there is no doubt that climate and ecosystem changes will have an impact on forestry in the region.

Some climate change impacts are currently addressed as they happen – for example: wildfire suppression, salvage and reforestation, increasing fall/winter rain, increasing forest health issues. These immediate effects require plans to be adaptable. Some impacts of climate change are so broad and result from so many variables that it is difficult to quantify or be certain in any one year but instead will take several years of data and trend analysis to determine if adaptations require revision.

However, one of the most important features about climate change science is how quickly it is changing, given the amount of research being done in the area. Reviewing trends in this data and incorporating new information into the Canfor Kootenay Climate Change Vulnerability Assessment (CCVA) is key to developing effective climate change adaptive and mitigative strategies. The reviews will note if new or revised climate change adaptations should be incorporated into the appropriate SFMP strategies and SWPs going forward.

A key goal of sustainable forest management in BC is the reforestation of forest stands and landscapes that are productive, healthy and resilient. To achieve this objective, we must ensure a 'match' of planting stock with environments where the trees will thrive, be well adapted, and able to respond to periodic and catastrophic abiotic and biotic disturbance events such as drought, wildfire, pests and disease infestations. Seed transfer standards are one tool that facilitates reaching this goal.

Climate-based seed transfer encompasses a range of seed use decisions, including: (1) selection (seed procurement and identification of seedlots that are climatically suitable, (2) transfer (matching seedlots to planting sites based on critical (safe) transfer distances that maximize productivity, while maintaining adaptation), and (3) ordering and/or planting seed/seedlings for reforestation within areas that have similar climate (deployment strategies across managed stands and landscapes aimed at maintaining genetic diversity and adaptation across the rotation).

Forest management activities that determine the composition of future forests will play a significant role in determining the future impact of climate change. Flexible stocking standards (with broader species choice) to manage reforestation species in consideration of predicted changes in climate have been developed by the Ministry of Forests and incorporated into the Chief Foresters Standards for Seed Use. The climate-based seed transfer (CBST) guidelines established in the Standards will guide sowing requests made by Canfor, thereby supporting implementation of assisted migration of species seedlots adapted to future climate conditions.

Strategy

1. See the Strategy for Indicator 11 – Tree Seed for the steps involved in part b of this indicator.
2. The Certification Specialist will complete an annual review of the Climate Change Vulnerability Assessment during Q1.
3. The Certification Specialist and the Strategic Planning Supervisor will review any new or altered climate change adaptations specific to the Kootenay Region during Q1 every year.
4. Climate Change adaptations will be incorporated into existing SFMP strategies and standard work procedures where appropriate.
5. These changes will be communicated to the appropriate staff as required.

Monitoring and Reporting

The CCVA will undergo an annual review and the results incorporated into SFMP strategies and SWPs as required. The monitoring of this review will be presented in the SFMP Annual Report and any changes to SWPs will be documented.

Seed transfer reports will be monitored on an annual basis for compliance purposes and reported in the SFMP Annual Report.

Photo: Gerry George

Indicator 26 – Land Conversion

Indicator Statement	Target (Variance)
Percent of the DFA converted to non-forest use through forest management activities (not including roads, landings, and other infrastructure directly related to forest management)	Less than 0.5% reduction of the DFA annually

Introduction

This indicator is important as it tracks any changes to the forest land base which in turn sets long-term sustainable harvest levels. Forest companies generally have limited influence on any deletions or conversion of forest area by other industries as these are generally a result of government land use policies for other industries such as mining or power transmission. The focus of this indicator is on tracking the removal of productive forest land base where forest managers do not have direct management responsibility and keeping it below the threshold. The target provides an overall DFA performance measure, evaluating land base lost or increased within the DFA.

This target is focused on those activities where forest companies do not have management responsibility and land may be converted to non-forest use (i.e. permanent clearing of forest for mine development or clearing of productive forest to build transmission lines). Additionally, Canfor's operating area agreements (spheres of influence) are changed periodically through negotiations with other forest license holders and this could increase or decrease the area within the DFA. Changes to operating areas may affect the DFA's long-term sustainable harvest levels.

In order to assess the maintenance of the productive capability of the land base, this indicator specifically tracks the amount of productive land base loss due to various non-forest uses by other industries that work with Canfor to harvest the areas and changes to the DFA. It would be impracticable to identify and track all land clearing by other parties within the DFA. This indicator will track those additions, deletions or conversions that Canfor directly participates in with other licensees and/or industries.

Targets

With the transition to the new FSC National Standards, conversion targets are described as a "very limited portion" of the management unit. In the FSC FM 2018 standards glossary, this is described as 0.5% of the DFA annually, hence the target described in this indicator.

Strategy

1. Canfor will work cooperatively with other industries and stakeholders to minimize the conversion of productive forest to non-forest use.
2. In instances where Canfor is asked to remove forest cover and the land will be converted to serve another purpose that has been authorized by the Crown, the hectares converted will be excised from the DFA.
3. Land that is converted to non-forest where Canfor does not have management responsibilities will be excised from the DFA as elements of certification requirements can no longer be met (i.e., pipelines, transmission lines, etc.).
4. The area will be reduced from the DFA and the amount of reduction will be tracked by the Digital Technology Team and the Strategic Planning Supervisor in the 'FSC DFA Area Excision Tracking Spreadsheet'.
5. A Timber Supply Review on the FSC DFA will be completed once every 10 years, or more frequently if required, to ensure that long-term harvest levels are sustainable within FSC and SFI certified areas. It will also ensure that harvest levels are consistent with certification management objectives. See Indicator 20 – Volume Harvested vs. Volume Allocated for more information.
6. The results of points 4 and 5 above will be presented in the FSC Annual Report.

Monitoring and Reporting

Monitoring will occur as outlined in the strategy above and reporting will be presented in the SFMP Annual Report.

Photo: Gerry George

Indicator 27 – Identified Non-Timber Forest Benefits

Indicator Statement	Target (Variance)
Number of incidences of documented concerns about non-timber forest benefits (NTFB) brought forward that are not addressed	0 incidences

Introduction

Forests provide a wide range of non-timber benefits across Canfor's Kootenay DFA. For the purpose of this indicator, a non-timber forest benefit (NTFB) refers to a specific identified benefit with a spatially definable area that has the potential to be positively or negatively impacted through forestry related activities.

This indicator refers to those non-tenured NTFBs that are derived from the forest such as botanicals and non-commercial recreation, as well as historic and spiritual values. Not exchanged in a marketplace, they are often dearly held by both those who directly benefit from these values, and by those who benefit by knowing these values exist. This indicator differs from the overlapping tenure holder indicator, which covers those tenured NTFBs, such as recreation, mining, guiding, range and trapping.

In general, in British Columbia there is a lack of quantifiable information about the non-timber benefits derived from BC's forests. Therefore, this indicator was developed to encourage the public to communicate NTFB information with Canfor and ensure that there is a process in place to manage the identified areas.

Targets

The target of zero incidences was set to ensure that all NTFBs brought forward by the public will be considered in forest planning and have management strategies developed collaboratively for them through the process outlined in the strategy below. There is no variance identified as once an NTBF is brought forward by a member of the public, it is not acceptable for any deviation from the outlined process.

Strategy

Identification of NTFBs:

1. Stakeholders who have already identified an area associated with one or more NTFBs have been linked to their identified area or in some cases a larger area (i.e., landscape unit) to ensure that they are notified through letters, email, or the Forest Operations Map (FOM) during the planning phases of cutblock development by the Planning Supervisor.
2. To reach unknown stakeholders with NTFB concerns, planned harvest areas are also referred in local newspapers with an invitation to comment. This creates opportunities for NTFB identification.
3. There are a number of group meetings that interested members of the public are invited to participate in. These include city council meetings, regional district meetings, watershed meetings, and general Q and As. Canfor will continue to attend other group meetings upon request.
4. An open-door policy is adhered to throughout the planning process, allowing interested members of the public to identify NTFBs and discuss potential impacts with the Planning Supervisors.
5. Any stakeholder who identifies an NTFB area through direct contact, response to an advertisement, or at a group meeting will be entered or updated in COPI.

Development of management strategies:

1. Individual or group meetings will be set up upon request from any members of the public interested in reviewing proposed harvest plans. Reviews will include maps and all available planning documents.
2. Planning Supervisors will work with the members of the public to accurately identify the spatial area associated with the NTFB that has been presented. This may require site visits to GPS areas.
3. Explanation by Planning Supervisors of all planned activities in the area will help both parties identify aspects of the plan with the potential to affect the NTFB.
4. If required, potential mitigative strategies will be presented to minimize the effects on the identified NTFB. These will be discussed with the identifier.
5. Meeting notes with any collaboratively developed strategies will be recorded in COPI and the SFMP checklist.

Implementation:

1. The Permitting Supervisor will enter any associated strategies from the SFMP checklist into the site plan and Land Resource Manager if applicable. If fieldwork is required, then the Permitting Supervisor is responsible for communicating the associated strategy to field crews and ensuring it is properly executed.
2. The Operations Supervisor will review the site plan and associated management strategies with Harvesting Contractors as part of the pre-work.
3. Post-harvest checklists completed by Operations Supervisors and post-harvest assessments done by Silviculture Supervisors are done after harvest completion to ensure compliance with the site plan.
4. Any non-conformances will be entered into Enablon by the respective supervisor and appropriate mitigative actions prescribed.

Monitoring and Reporting

1. The Strategic Planning Supervisor will run a COPI report and analyse the information for NTFB.
2. Any non-conformances will be recorded in Enablon and appropriate mitigative actions prescribed.
3. The results of this monitoring will be presented in the SFMP Annual Report.

Photo: Erik Bjerstedt

Indicator 28 – Overlapping Tenures

Indicator Statement	Target (Variance)
Number of incidences of documented concerns relating to overlapping tenures brought forward that are not addressed	0 incidences

Introduction

Canfor shares the forest with several overlapping tenure holders. An overlapping tenure refers to any Government issued tenure that overlaps Canfor's Forest licences and commonly include Guide, Trapper, Range, Mineral, Recreational, and Tourism Tenures.

Forest management must recognize the existing and potential economic benefits that can be derived from forests beyond the primary forestry industry. Forest management activities and practices have the potential to impact the rights and resources associated with the overlapping tenures. Additionally, overlapping tenures can be affected by changes to access and timing of operations. This indicator is important to ensure that overlapping tenure holders will have the opportunity to give input and helps develop management strategies intended to fairly address their concerns and protect the rights and resources associated with their tenure.

Targets

The target of zero incidences was set to ensure that all concerns brought forward by overlapping tenure holders will be considered in forest planning and have strategies developed collaboratively for them through the process outlined in the overlapping tenure strategy below. There is no variance identified because once a concern regarding the overlapping tenure holders' rights and resources has been brought forward by the tenure holder, it is not acceptable for any deviations from the outlined process.

Strategy

Identification:

1. Planning Supervisors will notify overlapping tenure holders through letter or email during the planning phases of cutblock development.
2. As a backup, planned harvest areas are also referred to in local newspapers and the Forest Operations Map (FOM) with an invitation to comment.
3. There are a number of group meetings that interested members of the public are invited to participate in. These include city council meetings, regional district meetings, watershed meetings, and general Q and As. Canfor will continue to attend other group meetings upon request.
4. An open-door policy is adhered to throughout the planning process, allowing tenure holders to discuss potential impacts with the Planning Supervisors.
5. The tenure holder is responsible for contacting the Canfor Planning Supervisors with any potential concerns.

Development of Management Strategies:

1. If concerns are not addressed in initial contact, an in-person meeting will be set up to review the details of the proposed activity and the concern of the tenure holder.
2. Meetings will review maps and proposed plans.
3. If required, mitigative strategies will be developed to satisfy the concerns and protect the rights and resources of the Overlapping Tenure Holder.
4. Meeting notes along with any collaboratively developed strategies will be recorded in COPI and passed on to Permitting Supervisors through email and on SFMP checklists.
5. If the tenure holder still feels that his/her rights or resources are not being fairly managed, Canfor will enter into a mutually agreed upon dispute resolution process. Results of the dispute resolution will be filed on the associated block file and noted in COPI. The dispute resolution process can be viewed in the appendices of this SFMP.

Implementation

1. The Permitting Supervisor will enter any associated strategies from email communications (described above) or SFMP checklist into the site plan. If fieldwork is required then the Permitting Supervisor is responsible for communicating the associated strategy to field staff, and ensuring it is properly executed.
2. The Operations Supervisor will review the strategy with Operations Contractors and ensure it is understood as part of the harvesting pre-work.
3. Harvest supervision done by Operations Supervisors and Contractors will ensure strategies from the site plan are being adhered to.

4. Post-harvest checklists completed by Operations Supervisors and post-harvest assessments done by Silviculture Supervisors are done after harvest completion to ensure compliance with the site plan.
5. Any non-conformances will be entered into Enablon by the respective supervisor and appropriate mitigative actions prescribed.

Monitoring and Reporting

1. The Strategic Planning Supervisor will run a COPI report and analyse the information for overlapping tenures.
2. Any non-conformances will be recorded in Enablon and appropriate mitigative actions prescribed.
3. The results of this monitoring will be presented in the SFMP Annual Report.

Indicator 29 - Local Procurement of Goods and Services

Indicator Statement	Target (Variance)
Maintain a high percentage of procured goods and services that are from local sources	≥70% of Kootenay Woodlands dollars are spent in local communities over a five-year average (-10%)

Introduction

Photo: Garred Huber

This indicator is important to test the economic sustainability of the forest industry and measures the degree to which expenditures in forestry-related activities support the local economy. The development of a strong local economy promotes durable labour markets, educational opportunities, and amenities to attract highly qualified individuals to the forest sector. Therefore, it contributes directly to the long run sustainability of both the industry and the local economy. In the same way that larger forest organizations 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 their local community. As the majority of forest workers are hired locally, communities benefit by forest planning and operations.

This indicator looks at the amount of money spent by Canfor locally across all businesses. Forests represent not only a return on investment (measured, for example, in dollar value, person-days, donations, etc.) for the organization but also a source of income and non-financial benefits for DFA-related workers, contractors, and others; stability and opportunities for communities; and revenue for local, provincial, and federal governments.

Local is defined as businesses that have mailing addresses or known established businesses located in the East Kootenay region. Procurement of local goods and services includes seeking the optimum or ‘highest and best’ value for goods and services without compromising safety, quality. and cost-competitiveness.

Targets

This target is established based on past performance and input from the Radium Public Advisory Group's input that felt the previous target of 50% was too low (the PAG is no longer in session, however this target was developed when the SFMP was first created). The target reflects a desire to enhance community wellbeing by ensuring greater than 70% of forestry-related expenditures stay within local economies. The variance is intended to account for the variability associated with the business cycle and the purchase of goods and services that may not be available locally.

Strategy

1. It is the responsibility of all Woodlands and mill staff to follow corporate policy and in-house practices when purchasing goods and services. These give direction to develop and promote industry in the communities and regions in which Canfor operates while being financially prudent and purchasing quality goods and services.
2. It provides guidance for such items as contract purchases, quotes, tendering, etc. When these criteria are met, the purchases of quality products and/or services on a competitive basis with priorities given to local and regional suppliers and manufacturers.
3. In order to promote local businesses within the community or region, Canfor will, on occasion, give discretionary consideration. The decision to buy must still be based on the criteria of delivery, quality, freight costs, FMS requirements, and local versus out-of-town vendors.
4. The purchase of goods and services is tracked in Coupa, Canfor's internal accounting system and monitored by the Kootenay Woodlands Accountant.
5. The Strategic Planning Supervisor will analyse the local spend data and calculate the five-year average.
6. This average will be presented in the SFMP Annual Report.

It is important to note that there are certain situations where local purchasing does not occur. These include specific brands of equipment and repair parts that are only available from the manufacturers or the product and/or services are not available within the local area. The most notable is the purchase of seedlings – these must be purchased from outside of the local area due to the lack of seedling nurseries in the East Kootenay Region. Cost competitiveness from economy of scale purchases from Canfor's ability to leverage its purchasing power may favour certain supplier relationships.

Monitoring and Reporting

The monitoring of local spending will occur as outlined in points 4 to 6 in the strategy above. The dollars presented are for the entire DFA which includes both FSC and SFI certified areas.

Indicator 30 – Corporate Sponsorships, Donations, and Scholarships

Indicator Statement	Target (Variance)
Number of corporate donations, scholarships, or other sponsorships to local community groups, individuals, or events	≥5 donations and/or sponsorships to regional communities, events, or individuals per year (-1)

Introduction

This indicator demonstrates Canfor's commitment to local communities through corporate sponsorships, donations, and scholarships. It measures the degree to which Canfor provides economic benefits to local communities in addition to expenditures in forestry-related activities that support the local economy.

Canfor funds organizations and projects that meet the needs of the community and reflect Canfor's business goals and ideals. Canfor will seek out or give preference to unique or exclusive sponsorship or donation opportunities that will have a long-term and significant benefit to the community while providing Canfor with appropriate recognition. These could include youth and education, community enhancement, forestry and environment, amateur sports, and health and wellness.

Canfor partners with post-secondary institutions to provide scholarships to students in forestry, wood products manufacturing, and other forestry-related engineering and trades programs. These scholarships are managed directly by Canfor's partner institutions. Canfor also provides scholarships to students entering degree or trades foundation programs related to forestry, and in areas in which there is a skills shortage.

Targets

This target is established based on equitable distribution of available funds throughout communities within Canfor's operating areas and reflects a desire to enhance community well-being. The target will ensure that applications meet Canfor's criteria while offering fair distribution of the corporate funds available. The variance is intended to account for the variability associated with valid applications received for donations and scholarships.

Strategy

1. Individuals interested in receiving financial sponsorship from Canfor are invited to write a letter or email requesting funding.
2. The management employees who live and work in the community make sponsorship decisions locally.
3. The financial information is tracked in Coupa, Canfor's internal accounting system.
4. The Strategic Planning Supervisor requests the sponsorship and donation information from the Canfor corporate team who will send over the financial information.
5. The information is presented in the SFMP Annual Report.

Monitoring and Reporting

The results of this indicator are tracked, monitored, and reported as per steps 3 to 5 in the strategy outlined above.

Indicator 31 – Environmental and Safety Training

Indicator Statement	Target (Variance)
Employee training in environmental and safety procedures is in compliance with employee targets	100% of Kootenay Woodlands employees will have the required environmental and safety training (-5%)

Introduction

Sustainable Forest Management (SFM) requires safety training and environmental awareness for forest workers to know how to work in a safe manner and adhere to environmental requirements. Investments in training and skill development generally pay dividends to forest organizations by way of a safer and more environmentally conscious work environment. Providing training and associated skills development means that there will be longevity and diversity of skills in local communities.

Assessing whether employees have received both safety and environmental training is a direct way of measuring this investment. Training plans should be in place for employees of the organizations who work in the forest. Measuring whether the training occurred in accordance with these plans will confirm an organization's commitment to training and skills development.

Contractors have training obligations to meet both Canfor's internal requirements and legal targets. They are responsible for training their own employees and maintaining training records.

Photo: Nick McRae

Targets

This target is established so that all Kootenay Woodlands employees have the required environmental and safety training as per the requirements for their position to execute plans safely and properly. The variance allows for some discretion with respect to employees whose work is insulated from forest operations (for example administrative or clerical work) or who may be new hires and are completing training as part of their orientation.

Strategy

1. The Safety Coordinator and the Sustainable Forestry Coordinator are responsible for determining the training program for each Woodlands position.
2. The Safety Coordinator will update the list of required courses for each Woodlands position in HR Online.
3. HR Online will send out email reminders to Woodlands employees when their required training courses are due. This will ensure that employees do not allow their training to lapse.
4. Training shall be provided to employees via HR Online training modules or local course offerings. Canfor specific training materials are provided to contractors in the spring of every year and they are responsible for providing required training to their workers.
5. Each contractor must provide their Canfor contact with a signed training sheet outlining which employees completed the training package.
6. Workers are responsible for completing all required training as per the HR Online training requirements. Supervisors are responsible for ensuring that all employees under their direct supervision have completed all required mandatory training. The supervisor must also ensure that employees transferring from other divisions or departments have the required training. Supervisors must address deficiencies in a timely manner.
7. The Strategic Planning Supervisor will work with the Safety Coordinator to determine which employees are not up to date on their required training courses.
8. The results of this analysis will be presented in the SFMP Annual Report.
9. Any gaps in employee training will be remediated as soon as possible.

Canfor also supports personal development education and training, which includes training courses that are marginal to the effectiveness of an employee in his or her present position, but which may help the employee qualify for other positions within Canfor.

Monitoring and Reporting

The HR Online program monitors the dates of courses assigned to employees. An automatic email notification is sent prior to courses expiring to ensure that employees are aware of training coming due.

The results of the annual review by the Strategic Planning Supervisor are presented in the SFMP Annual Report.

Indicator 32 – Educational Opportunities

Indicator Statement	Target (Variance)
Number of people who took part in an educational opportunity	≥ 25 people

Introduction

The ability of people to share information and discuss and solve problems is key to achieving and maintaining meaningful participation. Many types of capacity development initiatives can be used to help promote meaningful participation.

This indicator recognizes the importance of providing informational or training opportunities for members of the public or stakeholders. They provide local knowledge that contributes to socially and environmentally responsible forest management. At times, public members may feel limited in their ability to contribute to discussions because they lack technical forestry knowledge. Broadening this knowledge enables better dialogue and helps contribute to balanced decisions and an SFM Plan acceptable to much of the public. Educational opportunities would include field trips, guest presentations on a specific topic, participation in children's summer camps, etc.

Targets

This indicator was developed when the Public Advisory Group was in session, however it has since been disbanded. When the PAG was still functioning, previous minutes were reviewed and it was determined that at least one opportunity could be provided with a minimum of 25 people.

Strategy

1. Canfor is committed to working with all parties with an interest in the DFA, including Indigenous Peoples, rights holders and directly affected parties. This commitment includes on-going sustained efforts to provide and receive information relevant to forest management; continuous, multiple efforts to meet people in a way that works for them; and provision of a forum where people feel they can bring their concerns and be heard.
2. Site level engagement between the Planning Supervisors, Permitting Supervisors, and members of the public, first nations, and stakeholders is vital in ensuring opportunities are provided for education on forest management.
3. An open-door policy is adhered to throughout the block planning process, allowing directly affected parties to discuss potential impacts with Planning Supervisors regardless of notification timelines.
4. Conversations and correspondence will be recorded in COPI and passed on to Permitting and Operations Supervisors through email and/or the SFMP checklists and stored on the block file.
5. Broad-based engagement is a continuous process and Canfor staff participate when they are invited to do so.
6. The Planning Team will review COPI records and discuss any educational opportunities that were provided in the last calendar year. The Strategic Planning Supervisor will present these results in the SFMP Annual Report.

Monitoring and Reporting

Monitoring and reporting will occur as outlined in points 4 through 6 in the strategy above.

Indicator 33 – SFMP Monitoring Report

Indicator Statement	Target (Variance)
Sustainable Forest Management monitoring report is made available to the public	One SFMP Annual Report summary document is posted to Canfor's external website annually

Introduction

This indicator recognizes the importance of keeping Indigenous Peoples, rights holders, and directly affected parties informed on the status of sustainable forest management within the Kootenay DFA. Issues of concern brought forward by the public are part of the discussions occurring during the stakeholder referral and First Nations Infosharing processes and often work their way into a reporting requirement of the SFM Plan. Annual reporting of the SFM Plan's performance provides an open and transparent means of demonstrating how issues of concern are being managed. It also provides an opportunity for the public to respond.

Targets

The target is established to provide timely and topical information to the local public, as well as a worldwide audience via Canfor's external website. In addition, this source of distribution has a contact mechanism for those looking for additional information or to provide input.

Strategy

1. The Strategic Planning Supervisor will complete the SFMP Annual Report by the fall of each year.
2. They will create a document that summarises the results from that calendar year and remove any sensitive information that should not be viewed by the general public.
3. The Strategic Planning Supervisor will send the report to the corporate team who will then upload it to the Canfor external website. It can be viewed here.

Monitoring and Reporting

Monitoring for this indicator is dependent on the individual indicator monitoring processes as each is different. See specific indicators for further details.

Reporting for this indicator is based on the summary document being posted on Canfor external website. The results will be presented in the SFMP Annual Report.

Indicator 34 – Third Party Verification

Indicator Statement	Target (Variance)
An independent, third-party review of Canfor's achievement in meaningful participation with the public	Compliance with an external audit

Introduction

The effectiveness of public participation is difficult to quantify with traditional indicators and measures. The best effectiveness measure is a comprehensive, independent, third-party review of the program to ensure it is meeting its objectives. This review could be done as part of an existing external audit process, such as a Forest Stewardship Council (FSC) or a Sustainable Forest Initiative (SFI) audit, or it could be done as a stand-alone project.

Targets

This target was established based on the best management practices established by FSC and SFI. In a forest as complex and dynamic as the Kootenay DFA, it is expected that there will be temporary lapses in achieving meaningful participation. So long as Canfor remedies these within a timely manner (timelines set by the third-party reviewer), this indicator is considered met.

Strategy

1. Canfor is committed to working with all parties with an interest in the DFA, including Indigenous Peoples, rights holders and directly affected parties. This commitment includes on-going sustained efforts to provide and receive information relevant to forest management; continuous, multiple efforts to meet people in a way that works for them; and provision of a forum where people feel they can bring their concerns and be heard.
2. The stakeholder referral and First Nations Infosharing processes provide the opportunity for interested parties to review and comment on proposed Canfor planning activities.
3. An open-door policy is also adhered to throughout the block planning process, allowing directly affected parties to discuss potential impacts with Planning Supervisors regardless of notification timelines.
4. Conversations and correspondence will be recorded in COPI and passed on to Permitting and Operations Supervisors through email and/or the SFMP checklists and stored on the block file.
5. A third-party audit will be conducted on an annual basis to provide an objective review of Canfor's public participation and ensure that it is being achieved.
6. Any non-conformities to operational plans or certification standards will be remediated within a time frame set by the third-party reviewer. Findings will be entered into Enablon by the Strategic Planning Supervisor and prescribed remedial actions.
7. The public summary report from the audit will be posted to Canfor's external website, at which point this indicator will be reviewed.

Monitoring and Reporting

Monitoring for this indicator will be undertaken by continual participation in annual FSC and periodic SFI audits. The results of each audit will be entered into Enablon and indicator conformance recorded in the SFMP Annual Report.

Indicator 35 – Certified Safety Program

Indicator Statement	Target (Variance)
Implementation and maintenance of a certified safety program	100%

Introduction

Canfor's first measure of success is the health and safety of its people. This philosophy is embraced and promoted from the mill floor through the woodlands to the executive offices. This commitment is reflected in the work practices and safety programs employed at all operations.

Worker and community safety can be impacted by forest management strategies. The provincial government sets acceptable safety limits for forest workers. Other guidelines identify other forms of risk potentially affecting communities and forest visitors, such as slope instability or fire. Monitoring safety within the SFM Framework will assist in refining forest management strategies that accomplish their intended function without putting workers and communities at risk.

This indicator is meant to measure the impact of forest management activities in relation to safety incidences for forest workers, as well as other community residents and area users. Safety incidents arising as a result of machine or operator error are not included unless directly attributable to forest management activities. This indicator attempts to measure both procedures followed to maintain safety at acceptable levels, and actual safety outcomes.

Targets

The target is for compliance with a safety program as evidenced through safety audits conducted to the BC Forest Safety Council SAFE Certification (BCFSC SAFE). Safety audits reveal if current safety programs are effective and if the safety program is being continuously improved. The results of Canfor's annual Safety Audit will be used to determine if Canfor maintains its' SAFE certification.

Strategy

1. Canfor management is to reiterate to Woodlands staff the importance of worker safety on a continuous basis.
2. Woodlands staff are responsible to ensure that they are practicing safe behaviors while in the field and the office.
3. Contractors are responsible for ensuring that their staff are adequately trained to practice safe behaviors during operations.
4. The Joint Occupational Health and Safety Committee is responsible for ensuring that the OHS program is maintained and up to date. This includes all documentation and audits.
5. The results of the health and safety audit will be used in a continuous improvement framework across Kootenay Woodlands to ensure practices remain up to date and safe.
6. The Strategic Planning Supervisor will record the results of whether the operation has retained its safety program certification in the SFMP Annual Report.

Monitoring and Reporting

Kootenay Woodlands will undergo periodic safety audits to retain their safe certification. Annual compliance will be reported in the SFMP Annual Report.

Indicator 36 – Indigenous Peoples Awareness Training

Indicator Statement	Target (Variance)
Employees receive Indigenous Peoples awareness training	100% of required staff have Indigenous Peoples awareness training (-10%)

Introduction

It is important for staff who work with Indigenous Peoples to have a clear understanding of Indigenous Peoples titles and rights, treaty rights, and an appreciation of their culture as there may be a potential to impact or infringe on those rights without proper training or understanding. Section 35 of the Constitution Act. 1867 to 1982, Part II - Rights of the Aboriginal Peoples of Canada states:

"The existing aboriginal and treaty rights of Aboriginal Peoples of Canada are hereby recognized and affirmed".

Examples of rights that Section 35 has been found to protect include hunting, fishing, trapping, gathering, sacred and spiritual practices, and title. SFM requirements are not in any way intended to define, limit, interpret, or prejudice ongoing or future discussions and negotiations regarding these legal rights and do not stipulate how to deal with Indigenous Peoples title, rights, and treaty rights. The first step toward respecting Indigenous Peoples title, rights and treaty rights is compliance with the law. It is important for companies to understand applicable Indigenous Peoples title, rights, and treaty rights, as well as the Indigenous Peoples interests that relate to the DFA.

Canfor staff and local Indigenous communities will seek to better understand each other's culture through improved communication driven by various initiatives and mutually beneficial business relationships. Canfor will identify and promote cross-cultural learning opportunities to improve both parties' understanding of each other's culture. These may include Canfor staff taking tours of communities, Interpretive Centers, facilities, and participation in various events. Canfor will invite Indigenous Peoples to tour Canfor's operations, manufacturing, and other facilities.

Targets

The target of 100% compliance for required staff to complete Indigenous Peoples Awareness training supports Canfor's requirement to comply with laws and their desire to have positive open communications with local Indigenous Peoples. This involves all Canfor's required managers and staff members have a good understanding of Indigenous Peoples culture, title and rights, and treaty rights. For this reason, 100% of required staff will have Indigenous Peoples Awareness training. The variance allows for staff who may be changing roles and provides a short time period to complete the training.

Strategy

1. All Canfor woodlands staff are required to take Indigenous Peoples Awareness Training periodically depending on their position.
2. All new staff must complete Indigenous Peoples Awareness Training as soon as possible.
3. HR Online will send out email reminders to Woodlands employees when their required training courses are due. This will ensure that employees do not allow their training to lapse.
4. The Strategic Planning Supervisor will present the results of the training in the SFMP Annual Report.

Monitoring and Reporting

The HR Online program monitors the dates of courses assigned to employees. An automatic email notification is sent prior to courses expiring to ensure that employees are aware of training coming due.

The results of the annual review by the Strategic Planning Supervisor are presented in the SFMP Annual Report.

Photo: Ashleigh Harvison

Indicator 37 – Indigenous Peoples Understanding of Plans

Indicator Statement	Target (Variance)
Evidence of best efforts to obtain acceptance of applicable management plans based on Indigenous communities having a clear understanding of the plans by using processes preferred by individual Indigenous communities	≥3 forms of communication for all applicable management plans

Introduction

This indicator was designed to measure Canfor's effort in increasing Indigenous Peoples of the plans and information that they receive. Simply making plans available does not ensure that the management plans and what they represent are necessarily understood. It is important that Indigenous Peoples be asked if they have any questions of clarification regarding the information presented. Any questions arising must be clearly responded to and tracked through an appropriate method. Applicable management plans include Forest Stewardship Plans and major amendments, the SFMP and any major changes, and information sharing on proposed forest development.

Open, respectful communication with local Indigenous Peoples includes not only Canfor understanding of Indigenous rights and interests but for Indigenous Peoples to understand Canfor's forest management plans. With this open dialogue, the two parties can then best work towards plans and operations that are mutually agreeable. Canfor's forest management planning will incorporate and seek to accommodate local Indigenous Peoples' interests and values at the administrative, strategic, and operational planning levels.

Photo: Gerry George

The preferred processes of communication for the Ktunaxa Nation and Shuswap Indian Band include face-to-face meetings, information sharing submissions in the format preferred by the Nation or Bands. Referrals are made directly to the Neskonlith and Adams Lake Indian Bands using information sharing submissions in the format preferred.

Targets

The target is established to provide several opportunities and various formats for Indigenous Peoples to clearly understand management plans on an annual basis. To ensure Indigenous Peoples are provided opportunity for input into forest management, best efforts to obtain acceptance of all management plans will be made using a variety of forms of communication. A variance from this target is not considered appropriate.

Strategy

1. Canfor and Ktunaxa Nation Council (KNC) signed a Relationship Protocol (RP) and Engagement and Benefits Agreement (EBA) in July 2014. A Joint Management Advisory Committee (JMAC) was established to develop strategies and programs to achieve the objectives and targets set out in the agreements.
2. The Planning Supervisors will present every block that is proposed for harvest in a First Nations Infoshare. This will allow Indigenous Peoples to review and comment on the plans and allow Canfor to understand and incorporate traditional knowledge into operational plans.
3. When Canfor sends forest development proposals and management plans to Indigenous communities, they will offer to meet with the Nation or Band to explain the submission, answer any questions, and modify plans if required to accommodate and protect Indigenous Peoples cultural values.
4. Canfor and local First Nations identified culturally important High Conservation Value Areas (CCVA's) for all areas within the East Kootenay. Management strategies for the CCVF's were developed to protect and conserve the culturally important sites, resources and values.
5. Block and road site plans will include mitigative strategies to protect the identified values and resources. Post harvest evaluations and other inspections assess plan conformance.
6. The Strategic Planning Supervisor will assess the number of processes undertaken in the last calendar year to develop First Nations understanding of Canfor's forest management plans.
7. The results will be presented in the SFMP Annual Report.

Monitoring and Reporting

Canfor will retain a record of the Indigenous communities whose traditional territory (any part) overlaps with the DFA for the purpose of communicating with affected parties.

This indicator will track and report the number of forest management plans that were referred to Indigenous Peoples during the reporting year. Reporting will rely upon meetings held, materials provided for consideration, evidence of effort to provide time and resources, formal training opportunities, and responses to requests for input.

The results will be recorded in the SFMP Annual Report.

Indicator 38 – Level of Indigenous Peoples Participation in the Forest Economy

Indicator Statement	Target (Variance)
a) Evidence of Indigenous Peoples participation in the forest economy and efforts to increase the level of participation	Maintain, or improve upon, 2013 levels of Indigenous Peoples participation ($) in the forest economy calculated over a 3-year average (-10%)
b) The percentage of new hires in the Kootenay Region that are self-identified as indigenous	8.5% (-3%)

Introduction

Canfor wants to ensure Indigenous Peoples participate in the forest economy and realize benefits from operations within their traditional territories. This indicator and related targets look specifically at Indigenous Peoples participation in the forest economy and how to maintain or increase those levels of Indigenous Peoples employment, contracting, business activities, and delivery of goods and services in support of Canfor's core business. Canfor will implement strategies with the goal of maximizing the involvement of Indigenous persons and businesses in employment and procurement within Canfor's regional operations.

Canfor is committed to working with the best value suppliers and contractors including Indigenous Peoples businesses. Canfor will not compromise safety, health and wellness, environment, quality and ethical standards with any vendor.

Targets

This target is established based on 2013 levels of participation as it was the first full year of Canfor operating in the Kootenay region and after procurement target setting input from the Ktunaxa Nation at the JMAC. The target is set to promote and encourage Indigenous Peoples participation in the forest economy and increase the amount of opportunities and benefits they derive from forest operations within their traditional territory. Given the varying level of harvesting levels due to the economy's performance, total dollars spent in the region will vary from year to year, therefore total expenditures may not accurately reflect efforts to increase Indigenous Peoples participation and is set over a 3-year period to account for annual variation on harvest levels.

Canfor recognizes that there are occasions when Indigenous Peoples, after being giving the opportunity, elect not to participate and is respectful of those decisions.

It is also important for Canfor to hire skilled workers from a diverse range of backgrounds and under-represented groups. The target for part b of this indicator follows a similar methodology as the corporate level targets – First Nations make up 8.5% of the population in the Kootenay region, therefore Canfor is aiming to hire a similar representative percentage in their new hires to help promote a diverse workforce.

A variance was built into part b of this indicator to account for the multiple external factors that affect employment numbers. These include economic climate, self-identification of indigenous peoples, and employment opportunities, to name but a few.

Strategy

1. Canfor will work with willing communities to develop forestry capacity and explore mutually beneficial business opportunities. They will work with high value first nations suppliers and contractors.
2. Canfor will meet with Indigenous communities to identify their interests and capacity and develop strategies to increase their participation in the forest economy. These strategies could include a review of core business areas ad activities Indigenous vendors or suppliers may provide goods and services to Canfor.
3. Indigenous communities and Canfor may enter into agreements to work cooperatively on management of community forest licenses.
4. Canfor will increase internal awareness of identified Ktunaxa businesses that provide goods and services. Canfor and the KNC will jointly organize and conduct events that introduce Ktunaxa vendors and suppliers to Canfor staff and contractors to identify potential business opportunities.
5. Canfor will work with the KNC Employment staff to identify opportunities where citizens can participate in training programs delivered by Canfor.
6. Canfor and the Joint Management Advisory Committee will meet periodically to discuss employment opportunities for indigenous peoples.
7. The Strategic Planning Supervisor will calculate the three-year rolling average of Canfor's spend with local first nations businesses and report this in the SFMP Annual Report. Indigenous Peoples employment numbers shall be provided by HR and used for part b of this indicator.
8. The results of this indicator will be presented in the SFMP Annual Report.

Monitoring and Reporting

1. The total amount of business in dollars between Canfor and Indigenous businesses will be reported as a three-year rolling average and compared to the 2013 levels.
2. Indigenous employment numbers shall be provided by HR and used to calculate part b of the indicator.
3. The results of this analysis shall be presented in the SFMP Annual Report to ensure that First Nations businesses and nation members are participating in the local forest economy.

Indicator 39 – Disposal of Waste Materials

Indicator Statement	Target (Variance)
Number of significant fuel and hazardous waste spills per year	0 incidences (2)

Introduction

The disposal of waste and hazardous materials is a vital part of a safe and environmentally conscious operation. Waste materials have the opportunity to severely damage water sources, plants, and animal species as well as jeopardize the safety of forestry workers and should receive the same emergency response as afforded to a fire.

A spill is defined as a significant amount of petroleum or chemical that is released onto the ground or into a waterbody and can be classed as an accident, intentional (i.e., vandalism), or as a result of equipment failure or breakdown. All forestry operators are bound by the Spill Reporting Regulation. A significant spill is defined as one that is legally required to be reported to government authorities.

Targets

The target for this indicator is set to zero as any significant spill is deemed an incident in Canfor's system and creates potential negative repercussions for both the environment and forestry workers. A reportable spill in this instance is anything ≥ 100 liters for petroleum substances, ≥ 25 liters for anti-freeze, ≥ 10kg for propane, and ≥ 1kg for pesticides.

It is understood that sometimes equipment malfunctions or vandalism occurs that is outside of Canfor's ability to control, therefore a variance of two incidences has been applied to the target of this indicator.

Strategy

1. Forestry contractors are required to carry spill kits in vehicles that are carrying fuel (i.e., logging equipment, pickup trucks with auxiliary fuel tanks, mobile tanks, etc.).
2. All Canfor Woodland staff and contractors are required to carry Canfor's Emergency Preparedness and Response Plan in their vehicles if they work in the field.
3. Canfor staff and contractors must remain up to date on their WHMIS, TDG, and Spill Response training (legal and Canfor requirement).
4. If a significant or non-significant spill occurs during forestry operations, contractors and Canfor staff must contain the spill as soon as possible, commence a cleanup response, and complete a report.
5. The spill must be reported in Canfor's internal tracking system, Enablon, where a root cause analysis will be conducted and remedial actions created. A significant spill must also be reported to the Ministry of Environment.
6. The Strategic Planning Supervisor will present the number of significant spills in the SFMP Annual Report.

Monitoring and Reporting

Canfor higher level management have corporate level targets associated will spills across all Canfor operations and will monitor any non-conformances at a strategic level. The Strategic Planning Supervisor will present the number of spills that occurred in the Kootenay DFA in the SFMP Annual Report.

6.0 Tactical Level

This section describes the aspects of SFM Planning that occur at the tactical level for the DFA. The objective of the tactical level is to establish forest management strategies that are sustainable for a range of forestry related values. This level localizes planning to meet the broad goals developed in the strategic planning level. The operational level is the place where those practices are described and implemented and monitored to meet sustainability targets.

At the tactical level, inventories are prepared, assumptions are made and future forest conditions are forecast. Tactical level assessments and planning will identify strategies and potential management practices that are considered sustainable. If current conditions do not meet the goals of sustainability, alternative strategies are designed and forecast to assess their effectiveness in meeting sustainability targets and goals. The strategies that best meet the goals of sustainability are developed in consultation with the stakeholders.

Section 6.0 provides more in-depth details, however the main components completed include:

1. Timber Supply Area Rationale for AAC determination as it relates to the SFMP.
2. Forest Stewardship Plan (FSP) under the *Forest and Range Practices Act (FRPA)* – this outlines the results of strategies for objectives of the Kootenay Boundary Higher Level Plan Order (KBHLPO) and FRPA objectives.

6.1 Regional Forecasting Related to the SFMP

The Timber Supply Area Rationale for AAC determination for each of the three TSAs include sensitivity analysis around the following:

- Size of the THLB
- Stand yields
- Minimum harvest ages
- Siet productivity estimates
- UWR guideline
- Gains from use of selected seed
- Regeneration delay
- OGMA/MMA modelling
- Mountain Pine Beetle infestations

The analysis is conducted using information related to the timber harvesting land base (THLB), timber volumes, and management strategies to indicate future state projected out for a period of 400 years. Prior to the Chief Forester making a determination, the public is invited to review and comment on the Timber Supply Review (TSR). Additional information on the opportunities that are provided for public input can be found on the TSR public webpages: Cranbrook TSA; Invermere TSA. Further information pertaining to assumptions and analysis can be found within the Chief Forester's Rationale for AAC Determination for the respectable TSA.

Determinations for both Invermere (July 2017) and Cranbrook (August 2017) TSAs were made but the Government is required to complete apportionment where volume is attributed to each tenure holder within in the TSA. The apportionment was completed in early 2024 resulting in a decrease in AAC for Canfor.

6.2 Forest Stewardship Plans

Canfor's Forest Stewardship Plan (FSP) of the *Forest & Range Practices Act* (*FRPA*) outlines results or strategies for objectives found within the Kootenay Boundary Higher Level Plan Order (KBHLPO) and *FRPA* objectives set by government such as for visual, soil, or water objectives. The FSP outlines results and strategies and is considered a tactical component of the SFM Plan. The current (2024) FSP can be viewed at the Canfor office.

FSP Summary

Canfor operations are based on an identified supply of timber, stemming from a 20-year forecast of available volume within the Timber Supply Review for each of the three Timber Supply Areas (Cranbrook TSA, Kootenay Lake TSA, and Invermere TSA). The FSP shows the location of Forest Development Units (FDU) for the next 5 years and these can be as small as cutblocks or as large as a Licensee's Operating Area. FDU's within Canfor's FSP are parallel with the existing landscape units within each of the three Timber Supply Areas. FDU's identify the locations where primary forestry activities occur – this includes harvesting, road building, and silviculture activities over the 5-year term of the plan.

The plan specifies results or strategies for each FDU as they relate to primary forest activities that are consistent with:

1) Objectives set by government in the Kootenay Boundary Higher Level Plan Order, and
2) Objectives prescribed by *FRPA* or otherwise established by government.

The FSP also specifies measures for preventing the introduction or spread of invasive plant species and to mitigate the loss of natural range barriers. Finally, the FSP specifies the regeneration date, free growing height and stocking standards necessary to actively establish and reforest harvested areas. The FSP guides the refinement of available volume based on merchantability criteria (age and height class, piece size, volume), access to the resource, and operational feasibility. This information is further refined to produce an annual harvest plan that drives yearly planning and harvesting activities.

When amendments to the FSP are required, amendments will follow legislated requirements and the District Manager Policy for Amendments to FSPs. Changes to the FSP will be referred to those parties who may have the potential to be affected by these changes prior to submitting an FSP Amendment to the District Manager (i.e., Stakeholders, First Nations).

Several background documents are prepared to support the results or strategies of the FSP - these include, but are not limited to, Forest Health Plans, Forest Seral Stage Distribution and Allocation Reports, Patch Size Distribution Reports, Wildlife Tree Patch Distribution Reports, Domestic Watershed Reports, and a report summarizing Review Comments obtained from the public and Indigenous Peoples.

Canfor submitted a new FSP in early 2024 after many discussions with parties including local First Nations. The 2024 FSP included changes to stocking standards, riparian reserve widths, and invasive plant treatment requirements, to name but a few. Many discussions were had with the Ktunaxa Nation Council to incorporate elements of their Forest Standards Document – this is a document that outlines additional requirements for forest licensees operating on Ktunaxa traditional territory.

7.0 Operational Level

The operational planning level reflects the "on-the-ground" implementation of the strategies identified through tactical level planning. It translates these strategies into site-specific practices (Standard Work Procedures (SWP)) for forest management activities such as harvesting, silviculture and road building. These SWPs are to be implemented and adjusted in order to meet sustainability targets.

The challenge for operational level plans is to provide unambiguous instructions to guide 'on-the- ground' forest practices. Vague statements can lead to unintended misinterpretation. However, highly prescriptive plans tend to constrain the flexibility and professional judgment that is often necessary to achieve desired outcomes, particularly when one considers the diversity of social, economic, and ecological values across this province. Plans need to be an appropriate mix of unambiguous, yet flexible, prescriptions and guidelines that are still easily assessable and enforceable. Sustainability practices that are applicable at the local forest level will provide guidance for the specific site conditions and will assist in designing plans and procedures to contribute to meeting sustainability targets.

The collection of the data to satisfy the majority of specific monitoring plans is also completed at the operational level through strategies, standard work procedures, practices, or special projects. The assessment of monitoring information is described in 8.0 Adaptive Management of this SFM Plan.

7.1 Operational Level Plans/Schedules

Operational level plans can span from a one to 20-year time period. Annual scheduling of operations is completed, typically covering a four-year planning horizon. The operational planning level adheres to all required legislation and can act as both a reporting function as well as a mechanism to approve current operations.

7.2 Implementation – Sustainability Practices

Sustainability practices (Standard Work Procedures (SWPs)) are developed following current proven practices and are implemented at the operational level. Sustainability practices are established and maintained documented procedures that cover situations in which the absence of such procedures could lead to deviations from the SFM requirements. Contractors working on behalf of Canfor are required to follow applicable SWPs. The refinement of sustainability practices at the operational level provides for a practical and site-specific approach. The operational level is where the results of the practices are evaluated (via monitoring programs) against the strategic goals.

Resource professionals and managers need to develop sustainability practices that reflect the requirements set out at the strategic and tactical levels. Practices include harvesting, silviculture, roads and roadbuilding, and rehabilitation/restoration.

The current management scenario has been assessed for sustainability, both through the TSR process and through the public advisory process. Once the analysis of monitoring data for each indicator has taken place, practices can be re-evaluated to determine what, or if, any changes are required. Further details on practices and operating procedures can be discussed with Canfor Staff at a Canfor office.

7.3 Training

Canfor provides training to all employees and contract personnel to ensure they are aware of their responsibilities and are trained and competent to carry them out. Environmental and SFM awareness training for staff employees, operations employees, and contractors includes an explanation of (at a minimum):

- Responsibilities for supporting the commitments in the Environmental Policy, the SFM Commitments, and the SFM Plan
- Responsibilities for following written procedures and the potential consequences of not following operating procedures (impact on the environment, liability)
- The concept of sustainable forest management and how their work supports SFM
- The benefits of SFM and improved environmental performance
- Responsibilities in environmental emergencies, and
- Significant environmental aspects of the operation and the employee's responsibilities for reducing environmental impacts.

Furthermore, in order to ensure that practices and actions are completed that help to achieve or move towards the targets for each indicator, Canfor has developed and implemented the Responsibility Action Matrix. This can be found in Appendix 3.

8.0 Adaptive Management

Given that the SFMP is a living document, it is understood that changes will occur over time. In a competent management system, this change is considered to be continual improvement. The SFMP is based on the principle of adaptive management, which enables and encourages the improvement of management actions and practices based on knowledge gained from experience. SFM requires the establishment of relationships between forest values (i.e., Indicators) and management actions (i.e., strategies, operational level plans, practices) and the understanding of these relationships at the temporal and spatial levels at which forest systems are managed.

Adaptive Management (AM) recognizes change as a constant factor in forest management and it is necessary to understand the root causes of what has, and may be, changing. To do so requires learning how the economic, social, and ecological systems change and reconfigure in response to human attempts to manage them.

The desired concept of sustainability is described through management goals and objectives, with the associated uncertainties and risks translated into learning objectives. A structured monitoring process is used to generate results, which are then evaluated in terms of their validity, relevance, and significance. Through the evaluation process, monitoring information is combined with values, experience, training, and intuitive thinking in order to achieve shared knowledge and derive meaning that is useful in developing recommendations for adaptations to management practices and the overall plan.

To be successful, AM also requires decision-makers to acknowledge that uncertainty is a given. Therefore, forest managers need to recognize that reality and work within it, rather than planning to eliminate uncertainty. This has implications for not only how the problems are defined, but also the mandate given to those who are responsible for addressing the problems.

A comprehensive AM approach has been developed to address the needs of a forest manager in relation to SFM. The resultant AM framework consists of:

- Program level approaches for incorporating AM principles into strategic, tactical, and operational planning processes to create the necessary context for successful use of AM at the project-level.
- Project level assessment of opportunities/benefits/costs for implementing AM approaches on a project-by-project basis.

Continuous improvement, as exemplified in an AM Framework, is built into the SFM system. The following subsections detail the steps that work together to ensure the continuous improvement loop of the SFM Planning process:

- Managing information
- Monitoring
- Evaluation and analysis
- Reporting
- Adjustment/Adaptation

8.1 Information Management System

Over time, information management has become an increasingly essential component of resource management. It has become even more important with the science-based, integrated nature of the SFM concept. A variety of information needs to be warehoused in easily accessible formats including scientific background data and reports, resource inventory data, forecasting results, key uncertainties, risks, implementation reports, and monitoring/evaluation outcomes. Canfor's planning and operations staff and, in some cases, personnel from several levels of government and stakeholders, need access to the system to input and extract information. A cooperative, multi-user information management system (IMS) supports the shared learning and resultant knowledge approach of adaptive management, and the hierarchical structure of the SFM concept.

To address operational requirements, Canfor has a variety of information capture and management approaches. The current system includes the following components:

- Canfor's corporate website which contains, amongst many other items, the SFM Plans and Annual Reports.
- Specialized forestry software called Land Resource Manager (LRM) to capture and track all data related to roads, blocks, and silviculture.
- Strategic and operational level plans are developed using a geographic information system (GIS).

Canfor has standardized reports, a protocol for information management data exchange, and a plan to involve other government agencies. Current baseline data sources include the following for most indicators:

- TSR data package
- Terrain Stability
- Forest Cover/Vegetation Resources Inventory (VRI)
- In-house baseline data from Canfor
- SFM rationales
- SFM developed reports
- Local policy/strategy/guide documents

8.2 Monitoring Plan

Monitoring is the collecting of information to track indicators and to check performance against an expected outcome (i.e. target) for that indicator and allows for observation of changes over time and space. A monitoring and evaluation process is necessary to ensure that management plans and activities contribute to meeting the objectives and are capable of alerting the manager for any needed change in practices.

A monitoring plan or protocol is required for each indicator. There are essentially two types of indicators: process and performance. Process indicators describe a process, not an outcome. For process indicators, neither trend nor effectiveness monitoring is relevant. These indicators are not so much monitored as reported within the SFMP Annual Report.

For performance indicators (i.e. non-process indicators), status and trend monitoring plans have been, or are being, developed. Status monitoring provides a snapshot of how the indicator is currently doing.

Over time, these measurements provide the trend of the indicator. Trend analysis can be used to assess how well forest practices are helping in meeting targets. Monitoring data for non-process indicators also improves the forecasting models that are to be used in the next round of sustainable forest management planning.

Further to monitoring performance-type indicators, Effectiveness Monitoring tests assumptions that are made about indicators. It can assist in determining:

- What the relationship is between the trend of an indicator and practices, and
- When, or how, to change a practice.

The following steps summarize the process to develop local monitoring plans:

a) Review of Scientific Reports
b) Consultation with Specialists/Experts
c) Review monitoring rationales for each indicator
d) Adapt monitoring rationales to the local area by engaging with appropriate local Stakeholders/Experts/Managers
e) Develop a localized Monitoring Plan (unit/frequency/data source)

The monitoring plan for each indicator is included as part of the detailed discussion for the indicators in **5.0 Strategic Level**. For the purposes of this SFM Plan, the current condition for each indicator will be the starting point for trend monitoring and the basis from which analysis will take place in subsequent SFMP Annual Reports and updates to the SFM Plan.

8.3 Evaluation/Analysis and Reporting

As monitoring information is stored in the specified Information Management System, it will be evaluated for completeness and accuracy and then analyzed against the targets and/or forecasts developed for the DFA. Analysis takes place at the tactical levels, which is dependent on the indicator. Results of analysis of each indicator will be reported as part of the SFMP Annual Report. Stakeholders will be involved in the review of the SFMP Annual Report. While respecting confidentiality, results from the monitoring will be included in the SFMP Annual Report and will be made a publicly available document.

8.4 Adaptation

As part of Adaptive Management/continual improvement, the analysis and reporting steps may lead to adaptations in management strategies, the target, or the indicator itself. Additionally, new information (locally or from outside the area) or changes to policy and legislation may require changes to a component of the SFM Plan.

The following process will be undertaken to propose changes to the SFM Plan’s components:

- Analysis of monitoring data reviewed by Canfor
- Recommendations for changes put forward as a result of the review of the monitoring data
- Recommendations or non-conformances from internal and external audit results
- Review of recommendations by Canfor top management (i.e., management review)
- Review of recommendations from Stakeholders and Indigenous Peoples

- Further evaluation, if required
- Alternatives explored
- Changes made to the SFM Policy
- SFMP Annual Report

As part of the certification process, non-compliances or non-conformances may be found through internal and/or external audits. Canfor will address these through the Forest Management System (FMS) process and protocols. For example, those defined as having the responsibility and authority to:

- Identify and investigate non-conformances;
- Take action to mitigate any impacts caused; and
- Initiate, complete, and document root cause, corrective, and preventive actions and expected results.

Any corrective or preventive action taken to eliminate the causes of actual and potential non-conformances shall be appropriate to the magnitude of the problem and commensurate with the impact encountered.

Strategic Review

Strategic review of management plans, policies, or strategies is cornerstone to sustainable forest management and periodic reviews will be necessary at strategic, tactical, and operational levels. Canfor management and the staff identified as responsible for various components of the SFM Plan will undertake periodic strategic reviews.

This will consist of reviewing:

- Data from monitoring
- Comparing the status and trend against the target
- Updating knowledge gaps filled in through monitoring data
- Analysing the effectiveness of strategies used to achieve targets.

Findings will be summarized and reported through the SFMP Annual Report as well as recommendations for changes to the SFM Plan.

8.5 Integration with the Forest Management Systems

An Environmental Management System (EMS) is a management tool that enables an organization to control the impacts of its activities, products, or services on the environment. It is a structured approach for setting and achieving environmental objectives and targets, and for demonstrating that they have been achieved. The EMS requires an organization to have in place the mechanisms, policies, and structure to comply with environmental legislation and regulations and to evaluate such mechanisms, policies, and structure with the objective of continual improvement.

As a preparatory step to sustainable forest management certification, Canfor developed and maintained an Environmental Management System for their respective operations. In July of 2001, Canfor Kootenay operation was certified to ISO 14001 – Forest Management System (FMS).

Canfor's FMS provides a platform on which to build the sustainable forest management elements required to meet the FSC National Standards and the SFI Forest Management Standards. It provides a system for the continual improvement of performance that supports the adaptive management process within this SFM Plan in the following ways:

- The provision of mechanisms for the periodic reporting of performance, including environmental indicators within the FMS and relevant indicators within this SFM Plan.
- An annual internal audit program that assesses the implementation and maintenance of the FMS and this SFM Plan.
- A management review process that ensures higher management is aware of performance and is able to provide guidance and direction for the continual improvement of the FMS and this SFM Plan.

In addition, the FMS provides the assignment of roles and responsibilities, and the tracking of related training, to ensure the consistent implementation of these processes. The SFM Plan also makes use of the FMS document control and record keeping system to provide evidence of conformance to these procedures where relevant.

It is important to note that the Environmental Management System was integrated into Canfor's Forest Management System to capture the requirements of both the ISO 14001 standard and the CSA Z809 standard. Both of these certification standards have since been dropped from the Kootenay division, however the system satisfies many of the FSC and SFI process requirements, therefore it remains.

The SFM Plan will be revised, when appropriate, to reflect applicable changes that result from the FMS process.

Appendices

1. Range of Natural Variability – Scientific Papers
2. Ecological Indicators – References and Further Reading
3. Responsibility Action Matrix
4. SFMP Acronym List
5. SFMP Glossary
6. Dispute Resolution Process