CA̓WAK ?QIN
FORESTRY

Sustainable Forest Management Plan (SFM Plan)

Revision Date:
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Introduction

Sustainable Forest Management (SFM) strives to maintain and enhance the long-term health of forest ecosystems, while providing ecological, economic, social and cultural opportunities for the benefit of present and future generations.

On December 14, 2018 Western Forest Products (WFP) and Huumiis Ventures Limited Partnership (Huumiis) announced the creation of a newly formed limited partnership between WFP and Huumis, whereby Huumis acquired a 7% interest in Tsawak-qin Forestry Limited Partnership (TFLP). In 2021 Huumis increased its interest to 35%. The agreement established a Board of Directors with both WFP and Huumiis representatives which oversee the forest management activities within the Defined Forest Area (DFA) associated with Tree Farm Licence (TFL) 44. The Board of TFLP has committed to Sustainable Forest Management, to the Canadian Standards Association (CSA) Z809 certification standard, and to WFP's Environmental Management System (EMS).

The Sustainable Forest Management (SFM) Plan has been prepared to support Tsawak-qin Forestry Limited Partnership's commitment to sustainable forest management, consistent with the CSA Z809-16 standard. The SFM Plan is designed to complement the following existing management systems and procedures:

- Environmental Management System including the Timberlands Sustainable Forest Management Statement and SFM Management Procedure;
- Safety Program (and related SAFE Company certification);
- Existing management plans (e.g., TFL 44 Management Plan and Forest Stewardship Plan); and
- Legal requirements.

British Columbia has rigorous legislation and policies for protection, conservation, and sustainable management of forests. This legislative framework is being continuously adapted, as is forest management and policy. In addition to applying regulatory tools, Tsawak-qin Forestry Limited Partnership benefits from using voluntary tools, such as CSA Certification, to aid in the achievement of sustainable forest management (SFM).

Sustainable Forest Management

Canadian Standards Association (CSA)

The Canadian Standards Association (CSA) is a non-profit, membership-based association which has developed over 2000 standards for various industries. CSA develops both nationally and internationally accepted standards for values such as health and safety, quality of life and the environment.

CSA Z809 Standard

The CSA Z809 forest management standard is based on the Canadian Council of Forest Ministers (CCFM) SFM criteria and elements. The CCFM SFM criteria and elements are fully consistent with those of the UNCED Montréal and Helsinki processes, which are both recognized by governments around the world.

The CSA SFM Z809-16 Standard requires:

- A systematic approach to management, based on continual improvement; and compliance with legislation, regulations and government policies, taking into account environmental, social and economic factors;
- Public participation in order to give local communities, including First Nations, the opportunity to provide input into how forests are managed;
- Demonstration of sustainable forest management performance; and
- Third party audits to confirm adherence to the standard.

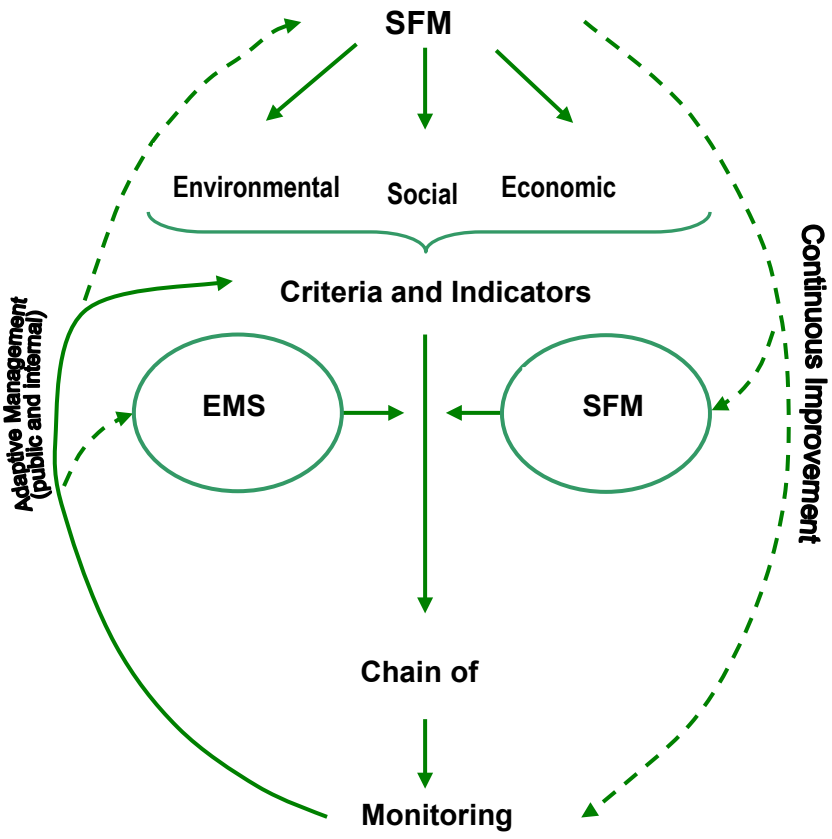
Tsawak-qin Forestry Limited Partnership is required to work closely with the public to identify local values, objectives, indicators, and targets that reflect the national criteria and to incorporate them into forest management planning and practices. Decisions are made together with the public during this process. CSA Z809 is more than a system standard; it is also a performance standard, and it sets specific requirements for the public participation process. This approach to performance not only respects government-recognized criteria for SFM but also allows the public to participate in the interpretation for the local forest.

The CSA Z809 Standard was recently reviewed and updated. The 2016 edition is the fourth edition of CSA Z809 (CSA Z809-16), sustainable forest management standard and supersedes all previous versions. The updates to the standard are part of CSA's regular standard review and revision process based on continual improvement. The standard is available at: http://shop.csa.ca/en/canada/sustainable-forest-management/z809-16/invt/27017442016.

SFM System

Tsawak-qin Forestry Limited Partnership maintains an SFM System under the Environmental Management System. The SFM System includes an SFM Statement documenting the corporate commitments to sustainable forest management, a SFM Management Procedure describing the general procedures/outline for achieving SFM certification and the SFM Plan that contains the specific CSA Z809 Standard requirements.

Figure 1: Overview of the SFM System



Environmental Management System (EMS)

The EMS is an adaptive management system that allows for a systematic approach to continual improvement. It is based on the dynamic, cyclical process of planning, implementation & operation, checking, and management review; the Plan – Do – Check – Improve cycle.

The core elements of the EMS are described within the Tsawak-qin Forestry Limited Partnership EMS protocols and the corresponding supporting documents which include, but are not limited to: policies, standard operating procedures, standards, and emergency plans (EPRP). These documents provide standards to guide daily activities out in the woods (i.e., "on the ground") in order to ensure environmental protection and compliance with legal requirements.

SFM Plan

The SFM Plan documents current and long-term SFM performance objectives and management strategies in the Port Alberni Forest Operation as described by Figure 2: The Map of the Defined Forest Area (DFA).

The SFM Plan is an adaptation of existing planning processes including strategic and operational plans, analyses, standards, monitoring and public review. Management of forest land in the area has continued to evolve over time in response to changes in society's values. Revised Management Plans, submitted at approximately 10-year intervals, include objectives, management strategies and analyses of management impacts. Standards and operating plans have been updated as changes occur. Monitoring has included corporate reports and both internal and external audits and inspections to evaluate conformance with management system requirements.

The values, objectives, indicators, targets, and management practices described in this document have been developed with assistance from the Tsawak-qin Public Advisory Group and are consistent with relevant government legislation, regulations, and policies. This is an evolving document that is reviewed and revised on an ongoing basis with the advisory group to reflect changes in the forest and local community.

Ongoing review and input is provided by the advisory group, DFA managers, and others through performance assessments, operational plan reviews, and processes related to specific land use issues such as landscape unit planning and community water supply.

Tsawak-qin Public Advisory Group (TPAG)

The Tsawak-qin Public Advisory Group (TPAG) has helped to develop the SFM performance framework for the DFA. A web site has been developed to facilitate communication with TPAG members as well as the general public: *https://www.tfl44lp.com/forest-stewardship/*

A broad range of interested parties from various sectors of society participate in each of the public advisory group meetings, e.g., local communities, business, recreation, fisheries, and government.

TPAG operates under a Terms of Reference that outlines goals, roles and responsibilities, membership, measures to deal with conflicts of interest, meeting content, timelines, communication, decision making, and dispute resolution protocols. The Terms of Reference may be found in Appendix 2.

Links to management plans and operational plans

The SFM Plan is an umbrella plan that links higher level plans, such as the Management Plan, with operational plans. The performance commitments included in the SFM Plan equal or surpass commitments previously approved under TFL 44 Management Plans. The SFM Plan reflects the objectives, management strategies, and reporting structure of management plans. The SFM Plan is influenced by other higher level plans, such as the Vancouver Island Land Use Plan, and by legislation including the Forest and Range Practices Act and the associated Forest Stewardship Plan for the DFA. The SFMP annual performance is reviewed and discussed at least annually during Management Review. Conclusions and action items drawn during Management Review are documented in the Management Review meeting minutes. The Management Review occurs at both the Port Alberni operational level, and at the Tsawak-qin Forestry Limited Partnership corporate level with Tsawak-qin Forestry Limited Partnership senior management.

Third-Party Independent Audits

To become certified to the CSA Z809 Standard, Tsawak-qin Forestry Limited Partnership must undergo a third-party, independent annual audit to the SFM requirements in the Standard. A registrar (certifier), accredited by the Standards Council of Canada, conducts the audit. The individual auditors employed or contracted by the registrar have the requisite forestry expertise and are certified as environmental auditors. Audits to the Standard are done by accredited certifiers and certified auditors who are independent of the standards-writing body (CSA).

Audits include interviews with staff, workers and TPAG members, document review, and field visits of the forest operation to ensure progress is being made towards the achievement of targets and that the SFM requirements are being upheld.

There is one CSA certificate issued by the registrar that covers Tsawak-qin Forestry Limited Partnership and all of the WFP tenures that are managed under the CSA Z809 standard. External audits are conducted annually on a rotating basis on a schedule developed by the registrar.

Defined Forest Area (DFA)

The DFA includes Tsawak-qin Forestry Limited Partnership (refer to Figure 2 for a map of the DFA). Short term volume based licenses that are issued to First Nations by the Ministry of Forests, Lands and Natural Resource Operations & Rural Development (FLNRO) that are within TFL 44 are excluded from the DFA for the duration that they are under the management responsibility of an entity other than Tsawak-qin Forestry Limited Partnership. Typically, these areas revert back into the TFL once they are harvested and reforested and will form part of the DFA. Parks and protected areas are also excluded from the DFA.

Tsawak-qin Forestry Limited Partnership respects the legal rights and responsibilities of interested parties within or adjacent to the DFA (e.g., First Nations, trappers, water license holders, etc.). Tsawak-qin Forestry Limited Partnership respects the treaty title and rights flowing from the Maa-nulth Final Agreement effective April 1, 2011. Tsawak-qin Forestry Limited Partnership maintains a record of interested parties when referring TFL Management Plans, Forest Stewardship Plans, and Pest Management Plans associated with the DFA.

The Tsawak-qin Forestry Limited Partnership is located on southwestern Vancouver Island. There are five communities within or adjacent to the licence area: Port Alberni, Bamfield, Anacla, Nitinat, and Kildonan.

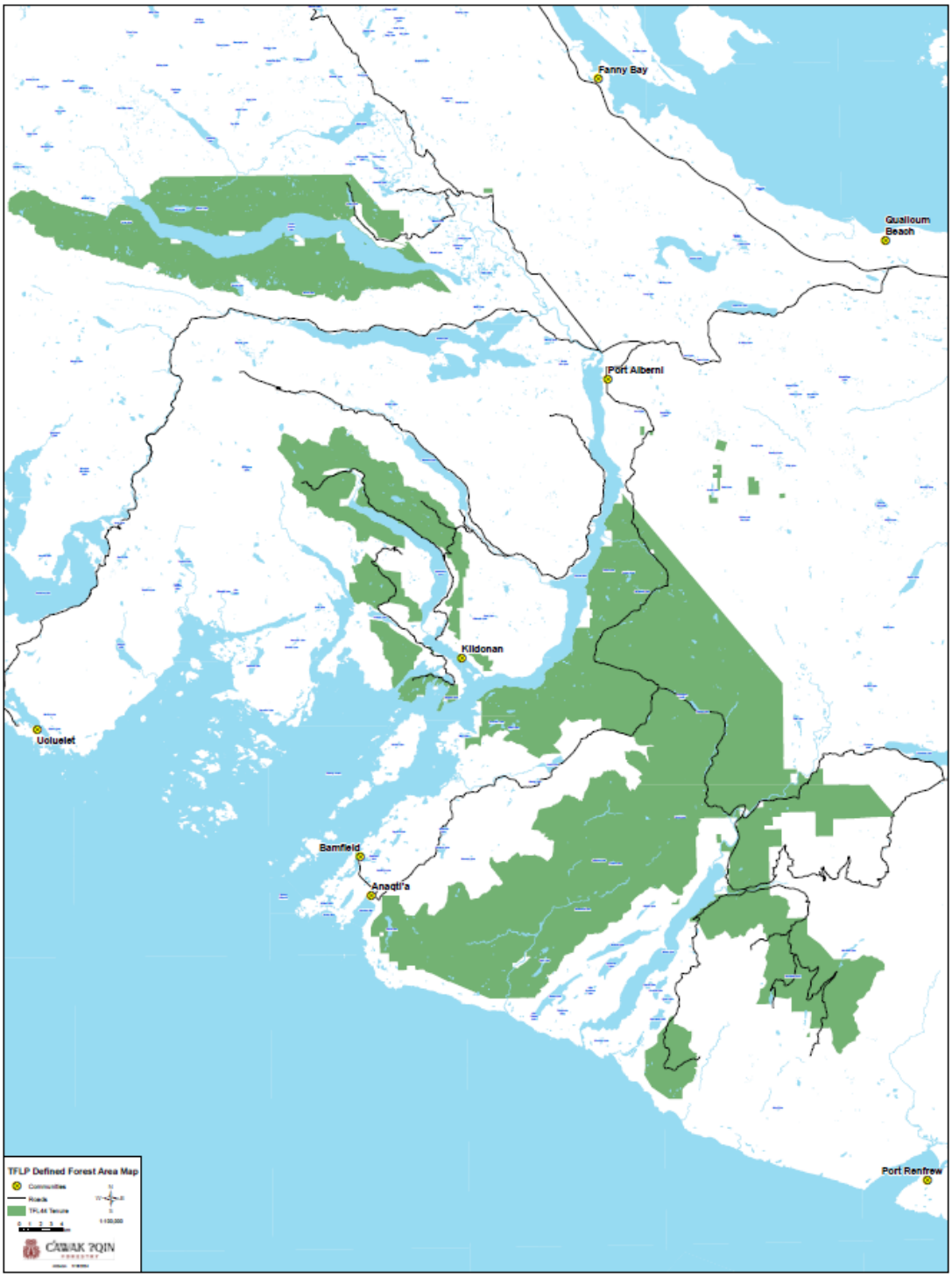
The DFA is divided into three broad geographic areas known as: Franklin, Henderson Lake, and Great Central Lake.

The Operations consist of timber harvesting, reforestation activities, maintenance shops, dryland sorts, various permits such as landfills, and an administrative office. Refer to the current TFL 44 Management Plan for a detailed description of the DFA, available at: *https://www.tfl44lp.com/forest-stewardship/management-plan-6/*

The Forest Land and Allowable Annual Cut (AAC)

The area of the DFA is 137, 618 hectares. The current AAC for TFL 44 is 642, 800 m^3 updated effective June 26, 2023.

Figure 2 - Map of the Defined Forest Area



Management Responsibilities in the DFA

TFL 44 is a renewable tenure on Provincial Crown land and administered by the Ministry of Forests, Lands, & Natural Resource Operations & Rural Development (FLNRO) under the Forest Act. This tenure is managed by Tsawak-qin Forestry Limited Partnership in conjunction with FLNRO and other government agencies. The primary roles and responsibilities are defined under a variety of legislation including, but not limited to, the Ministry of Forests Act, Forest Act, and the Forest and Range Practices Act.

Other independent third-party entities that currently carry out work on the DFA are not considered necessary for the achievement of SFM on the DFA.

First Nations

First Nation participation in TPAG will not prejudice aboriginal or treaty rights. TPAG meetings do not, in any way, intend to define, interpret, or prejudice ongoing or future discussions and negotiations regarding these legal rights and do not stipulate how to deal with treaty rights.

The Defined Forest Area falls within the traditional territories of the following First Nations:

- Stz'uminus
- Cowichan
- Ditidaht
- Hupacasath
- Lake Cowichan
- Lyackson
- Pacheedaht
- Penelakut
- Tseshaht
- Halalt

The Defined Forest Areas also falls within the Maa-nulth First Nation Areas of the:

- Huu-ay-aht
- Uchucklesaht
- Yuułuʔiłʔatḥ

Moreover, the Toquaht and Ka:'yu:'k't'h'/Che:k'tles7et'h' First Nations have Maa-nulth treaty rights in the Migratory Birds Harvest, the Wildlife Harvest, and the Domestic Fishing Areas which are in part associated with the DFA.

A map of the traditional territories can be reviewed at: *http://maps.gov.bc.ca/ess/hm/cadb/*

Products and Markets

Logs are distributed by the Fiber Supply department for sale and transport to Western Forest Products sawmills, outside purchasers and export.

Table 1 - DFA Products and Markets

Estimate By Species (%)		Estimate By Grade (%)	
Ba	13	Pulp / Chip	16
Yc	3	Utility	10
Hw	44	Merchantable / Sawlog	38
Cw	19	Shingle / Special Forest / Boomsticks	4
Fd	21	Peeler / Gang	23
		Shop & Better	9

General Management Strategies

The following general management strategies provide overarching guidance to Indicator specific strategies described in Appendix 1: Detailed Indicator Descriptions/ Results.

Biodiversity Conservation

Substantial areas, largely old growth, have been reserved throughout the DFA on inoperable or sensitive soil sites as riparian, wildlife or recreation reserves and, increasingly, as Variable Retention reserves according to the guidelines set forth under the Western Forest Strategy. Biodiversity conservation requirements are in place at the stand level. They are defined at the larger, landscape levels through BC's Landscape Unit Planning Guide and through the Western Forest Strategy.

Developing a biodiversity conservation strategy that is based on management of individual species is not feasible or effective because practices that benefit some species are often detrimental to others. The development of an ecosystem management approach that provides suitable habitat conditions for all native species will provide habitat diversity that in turn provides species biodiversity.

The strategy for biodiversity conservation is:

- Institute landscape-level planning.
- Plan forest management activities based on Western Forest Strategy.
- Work with the government specialists to further develop objectives and strategies for landscape units.
- Implement stand-level requirements as required under the Western Forest Strategy and Forest Stewardship Plan.
- Choose species mixtures for reforestation based on ecological and climatic site adaptation.
- Consistent with FSP Results and Strategies' and Western Forest Strategy, retain leave tree reserves or wildlife tree patches to enhance structural diversity of harvested areas.
- Improve knowledge through inventory and research.
- Cooperate with other agencies in research and inventory projects on species of concern.

Variable Retention

The term **variable retention** (VR) is used to describe an overall approach to harvesting and silvicultural systems that retains trees and associated habitat for purposes other than timber management and traditional silviculture goals. Variable retention can be implemented with a wide range of harvesting systems, and can utilize traditional silvicultural systems, such as shelterwood or selection, to meet forest regeneration objectives. As the name implies, various levels of retention can be used with different types, amounts and spatial patterns of structure. Retention can be dispersed throughout a cutblock (as individual trees or small clumps) or aggregated in larger groups and patches, depending upon objectives. There is such a wide range of possibilities within the VR concept that it is not a "one size fits all" approach.

The term **retention system** refers to a specific silvicultural system designed to meet the goals of variable retention. It was originally defined in the BC Operational Planning Regulations (March 1999) and has 3 requirements: 1) retention of trees distributed across the cutblock; 2) trees are left for the long term (at least one rotation); 3) distribution of leave trees achieves >50% "forest influence". The specific definition of the retention system is: *"a silvicultural system that is designed to:*

1. *retain individual trees or groups of trees to maintain structural diversity over the area of the cutblock for at least one rotation, and*
2. *leave more than half the total area of the cutblock within one tree height from the base of a tree or group of trees, whether or not the tree or group of trees is inside the cutblock."*

The distribution of long-term retention over the area of the cutblock is open to interpretation, but the spatial requirement in "2" for "forest influence" provides the minimum standard for distribution. The retention system is no longer officially defined in BC legislation; however the BC Forest Planning and Practices Regulation (Div.5, 64(4)) exempts harvesting that maintains >50% forest influence and meets other spatial requirements from maximum cutblock size restrictions. The retention system is considered a "partial cutting" approach and is categorized as an "even-aged" system despite the resulting uneven-aged forest because the cut areas are regenerated and managed much like other even-aged systems.

The retention system normally uses a one-pass harvesting approach but may also be prescribed with several harvesting entries. The three main variants of the retention system are: group, dispersed, and mixed. For safety, economic and ecological reasons, group retention is often preferred; however, all three variants have advantages for specific objectives.

Wildlife

Wildlife issues are twofold in scope: (1) habitat protection for large mammals and threatened or endangered species; and (2) biodiversity concerns related to conservation of animals and plants and the maintenance of ecosystem processes. Current knowledge is often limited and limiting, and new knowledge requires a process of adaptive management. The main current issues are:

- identification and conservation of specialized habitats for large mammals, primarily deer and elk,
- identification and conservation of marbled murrelet nesting habitat and releasing unsuitable habitat from marbled murrelet WHAs,
- identification and conservation of active Coastal Northern Goshawk nests,
- the actions needed to maintain habitat for rare and endangered plants, animals, and ecosystem processes.

The wildlife conservation strategy is to:

- comply with the Forest and Range Practices Act and the Forest Stewardship Plan,
- comply with government stated measures to manage Wildlife Habitat Areas (WHAs) and Ungulate Winter Ranges (UWRs),
- provide operations and agency personnel feedback on guidelines as part of an ongoing process of improving conservation,
- liaise with government wildlife and habitat protection staff on wildlife issues, especially to identify and conserve important habitat,
- continue assessments of ranges, habitat diversity, wildlife trees, etc., and conserve significant values,
- continue surveys to identify and preserve key marbled murrelet nesting habitat and obtain release of protected sites that do not have suitable habitat,
- train field crews to identify species at risk; selected goshawk territories for activity,

- manage riparian zones as directed by the stream indicators and objectives; as feasible, enhance protection on smaller streams particularly through the use of VR design,
- support other monitoring and research activities to increase knowledge of habitat resource requirements and the impacts of management activities on those habitats.

Fish Conservation

The fishery resource value is generally high and protection of fish habitat and water quality ranks as a significant priority. Biological issues dominate in the sense of conserving fish stocks and habitat. The opportunities include:

- Updating the classification of waters within the DFA.
- Mitigation, enhancement, and habitat restoration.
- Cooperation with First Nations and stakeholder groups.
- Determining measures for conserving endangered populations.
- The management of riparian areas.

The strategy for responding to these opportunities is to:

- Continue to undertake detailed stream inventories for operational plans.
- Continue to identify and implement enhancement, mitigation, and rehabilitation opportunities with available funding.
- Achieve full compliance in meeting the requirements of the Forest and Range Practices Act and the Forest Stewardship Plan.

Harvesting Adjacent to Parks

The general strategy for harvesting adjacent to all Parks is as follows:

- Roads close to federal and provincial park boundaries will be deactivated after harvest unless required for future forest management activities.
- Cutblock boundaries along park boundaries will have a windthrow assessment. If there is a windthrow risk, a buffer is created to allow for pruning so that no trees within the park are disturbed.
- Reviewing with a provincial or federal park representative the common boundary with the use of LiDAR or conducting a legal survey.
- If danger trees standing outside the park boundary are felled into the park, only the portion lying outside the park boundary may be harvested. The portion remaining in the park will be left as Coarse Woody Debris for ecological purposes.
- Minimize damage to surrounding trees and vegetation.
- Ensure that no trees within the park will be felled.

For additional background:

The portion of the common boundary between Pacific Rim National Park Reserve and TFL 44, from Tsusiat Lake to Black Lake that is adjacent or close to proposed cutblocks has been legally surveyed. The park boundary extending to the northeast from Tsusiat Lake is described as the height-of-land. This section of the boundary has been surveyed using a Global Positioning System (GPS). The boundary has been field reviewed by Parks Canada staff to 750m west of cutblock 7694. Parks Canada has agreed with the boundary location.

Fire Prevention and Suppression

Historically, wildfire in the DFA is a rare occurrence. Tsawak-qin Forestry Limited Partnership's primary objective is to prevent fires through good housekeeping, diligent equipment maintenance, and the strict control of operations as fire danger rises. The goal is to contain fires within 24 hours of detection. Fire prevention and control are governed by provincial legislation and Tsawak-qin Forestry Limited Partnership's fire preparedness.

Tsawak-qin Forestry Limited Partnership and its Contractors maintain and use their own fire suppression equipment. If needed, further equipment can be obtained from other operating units or government resources.

Tsawak-qin Forestry Limited Partnership is connected to the government Fire Weather Information Network. Tsawak-qin Forestry Limited Partnership also employs strategically located fire weather stations to monitor weather in the various operating areas. Data from these stations are used to modify or cease operations according to the fire danger rating.

Forest Insect Control

Similar to the fires, forest health problems have also not been significant. The last significant insect epidemic of forest defoliators was in 1945-6 when hemlock looper killed mature timber on a significant part of the Nitinat, Pachena, Sarita, and Klanawa River watersheds. A significant percentage of the dead timber was salvaged. The black headed budworm reached epidemic levels in 1972 but then collapsed.

Insect populations tend to build up over a number of years. The company's past experience has been that defoliation is normally reported by staff flying over the inaccessible old forest where such attacks normally start. When defoliation is reported it is inspected more carefully, boundaries roughly mapped and recorded. If the attacked area increases and/or the extent of defoliation increase significantly, assistance is sought from FLNRO or Canadian Forest Service (CFS) specialists and plans made for salvage. If warranted, an aerial attack plan may be prepared in conjunction with the pertinent federal and provincial agencies.

Balsam Woolly Adelgid mortality is generally found on drier sites of advanced and old growth stands of amabilis fir and sub-alpine fir in the CWHmm2 and MHmm1 subzones. Future yield losses will be minimized by favouring alternative species for plantations on affected sites.

For Ambrosia Beetles the DFA has had an active damage prevention program for over 30 years to minimize the significant financial loss these beetles can inflict. After early trials and operational spraying with a number of insecticides, damage is now controlled by careful management of inventories of susceptible logs and with strategically placed traps.

With Conifer Seedling Weevil plantation damage has been primarily confined to cool damp forest types along the west coast of Vancouver Island. Seedlings ≤2 years of all species are attacked with Sitka Spruce being the most resistant. Damaged is caused by adult weevils feeding on the seedling's stem, which can girdle the seedling creating mortality in the plantation. Currently, replanting damaged areas is the main action taken when mortality is discovered. Breeding trials have now produced Sitka Spruce seedlots that are 85 to 95 percent resistant to Sitka-spruce weevil. This weevil kills or injures the terminal shoots of 8- to 30-year-old Sitka Spruce. Sitka – spruce weevil resistant seedlots will continue to be planted on ecologically appropriate sites.

Forest Disease Control

Wood volumes lost to disease in the old growth forest have been estimated as highly significant by the Canadian Forest Service (CFS). However, measurements from sample plots for nearly 30 years suggest that growth is balancing mortality.

In the new forests, a number of parasitic fungi can kill trees or degrade log quality and value. The most significant of these are hemlock mistletoe, laminated root rot, Annosus root rot, and Armillaria root disease. The design of variable retention silviculture approaches must take into account the widespread incidence of mistletoe in old growth hemlock and in many of the 40 year plus second growth stands as this can pose a significant risk to the health of regenerating forest areas. Though Annosus is known to be widespread and though various measures were used when spacing or thinning in the 60s and 70s (high stumps and borax), no action is presently undertaken. Though Armillaria is endemic, assessments in Douglas-fir stands made by research staff in the 1950s found evidence of only scattered mortality, which appeared to decline or cease after canopy closure. It was concluded this pathogen is not presently a cause for concern.

Active preventive measures are now limited to mistletoe and laminated root rot.

Strategies for addressing mistletoe include:

- Selecting retention or reserve areas, preferring stands with a zero or low level of infection.
- Prescribing the removal or girdling of infected trees; and/or regeneration of non-susceptible species.
- Implementing strategies before susceptible regeneration is 3m in height.

Strategies for addressing infections of *Phellinus weirii* root rot, include:

- Visually assessing second growth stands proposed for harvest for the presence of laminated root rot during field work.
  - If the presence is negligible, no further survey is required.
  - If the presence is identified as low, a walk-through survey is required.
- If the presence is high, a grid survey by a forest health specialist may be completed. A grid survey is not required if the location of centers is obvious (e.g. between two roads). Accepting laminated root rot in retention patches if expected windthrow in the remaining stand is considered acceptable, and the first 10m from the boundary of the patch is planted with a non-susceptible species (e.g. deciduous or pine), or the stumps are removed from the ground. Group retention areas may also have infected trees if they are at least 10 meters from the outer perimeter.
- Considering establishment of non-susceptible species for the next rotation where site characteristics are appropriate.
- Ensuring that single trees selected for retention will have no visible infections and will be at least 10 meters from any visually infected tree.
- Maintaining records outlining the incidence of root rot when a detailed survey has been completed.

Potential root-rot treatments by incidence level are:

- Strata with very low to low (0% - 5%) incidence rates usually do not warrant treatment.
- Strata with moderate levels of root-rot (6% - 15%), individual centers may be treated by stumping, or planting of alternate coniferous/deciduous species.
- Strata with high or very high incidence rates (High = 16%-30%, VH = >30%), the entire stratum is usually treated as a single root rot center. Areas of concentrated root rot are

generally felled. Root rot areas with gentle topography may be stumped post-harvest. Steeper areas and smaller dispersed centers are usually planted with alternate species that are more resistant to root rot than Fd.

Windthrow Avoidance

Today's small cutblock sizes and tree retention within cutblocks expose more timber edge to potential damage from strong wind events. The strategy to minimize losses due to windthrow includes:

- Determining the natural windthrow factors associated with a particular cutblock design (e.g., cutblock size, stand characteristics, soil properties, location and orientation to expected winds) at the planning stages based on knowledge of historic wind patterns and assessments. Wind firmness is also a key factor guiding selection of groups and individual trees for in-stand retention.
- Determining which forest management objectives may be impacted if windthrow occurs adjacent to a particular cutblock.
- Deploying management practices according to the assessed risk of windthrow. These practices may include feathering of edges, pruning of trees, leaving larger buffers around the forest resources identified to be managed, topping of trees, locating retention in low windthrow risk areas, partial cutting, reconfiguring edges to a naturally wind firm edge, realigning boundaries to reduce the windthrow risk, partial salvage.
- Monitoring of windthrow and recovery of windthrow where practical and ecologically appropriate.
- Training of field personnel to recognize the potential for windthrow.

Reforestation

Consistent with the silviculture management objectives, Tsawak-qin Forestry Limited Partnership will regenerate the forest at densities that ensure full site coverage and high yields of quality timber. Tsawak-qin Forestry Limited Partnership will bear the silviculture costs for basic silviculture in compliance with the Forest Act. Other treatments on crown land (e.g. fertilization) will be undertaken if government funding is available.

Species selection – Tsawak-qin Forestry Limited Partnership bases species selection first on the silvicultural characteristics of the individual species and their adaptability to the particular site, including forest health and climatic considerations. The second criterion for selection is species value ranking. This is based on the company view of the wood qualities and desirability at harvest. Currently, western red cedar and Douglas-fir rank highest. Species selection will be consistent with the stocking standards approved within the Forest Stewardship Plan.

Forest tree seed – Tsawak-qin Forestry Limited Partnership utilizes Western Forest Products' five-year supply of seed for the range of species and seed zones that is consistent with the Provincial Chief Forester's Standards for Seed Use. Improved seed collected from company seed orchards is used and supplemented where necessary from other producers of high genetic gain seed. For species where improved seed orchard seed is unavailable, registered wild seed may be purchased or collected.

Site Preparation – Anticipated site preparation necessary to renew the forest is prescribed post-harvest. Site preparation methods that may be prescribed include mechanical piling or dispersal of slash, burning woody debris accumulations and stumping. Each method is considered in terms of efficacy, economics, environment, and government regulation before the optimal solution is prescribed.

Regeneration methods – Most sites are planted with improved seedlings in order to ensure full stocking, accelerate stand development, reduce brushing needs, increase stand resilience and attain early green-up, thereby improving growth and yield, reducing time to harvest and freeing adjacent areas for harvest. Immediate planting is normally prescribed on highly productive sites to reduce the need for brushing treatments. Natural regeneration may be prescribed if stocking will reach at least the minimal acceptable level two years before the end of the regeneration delay period.

Silviculture assessments – The normal assessment regime for each site prior to declaring free growing status is:

- A post-harvest assessment confirms whether or not the prescribed treatments regarding slash loading and disposal, site preparation, regeneration method, and timing still apply.
- A stocking survey is completed at least two years prior to the end of the regeneration delay period where natural regeneration has been prescribed. If it appears that regeneration targets will not be met, fill planting will be undertaken.
- A survival survey generally occurs about one year after planting. If necessary, a fill plant or a replant is scheduled.
- A stand assessment survey is completed after the survival survey and before the free growing survey. If needed, manual cutting of brush species, and/or another assessment is scheduled.
- A free growing survey is carried out near the end of the late free growing period prescribed in the Forest Stewardship Plan.

Road Building and Maintenance

Road building Standard Operating Procedures document plans/strategies for road construction, maintenance, and deactivation. General strategies for the maintenance of roads include recapping, grading, adding, or replacing culverts, roadside brushing, ditching short sections of road, applying dust control, bridge replacement, minor resurfacing and development of pits and quarries.

All permitted roads and bridges meet legislative requirements. New bridges and major stream crossings are reviewed by qualified professionals.

Where existing non-permitted roads are required for harvesting, they are permitted and brought up to standard.

Site Restoration

Roads and landings are maintained or deactivated when not in use according to the conditions of the Road Permit. Backspar trails, abandoned roads, unused gravel pits, and log landings may be restored as conditions permit by such techniques as ripping, return of spoil, spreading of debris, construction of anti-erosion barriers, re-vegetation and reforestation.

Soil Conservation

The DFA regularly experiences some of the highest rainfall events in North America. Where these high rainfall events occur on steep terrain, there is potential for landslides and surface soil erosion. Inventories of areas of potential terrain instability have been completed for most of the DFA. Terrain stability mapping and evaluations of surface erosion potential have also been completed for most of the watersheds in the DFA. The issues are:

- Potentially unstable terrain — Landslides are a natural and inevitable phenomenon that contributes to the evolution of the landscape. Although landslides occur in both logged and unlogged terrain, logging and road building may temporarily increase their frequency. Potential impacts of landslides include acceleration of sediment delivery to streams, damage to fish and invertebrate habitat and productivity, loss of productive forest site, unsightly scars, and damage to roads, culverts, and bridges.
- Surface soil erosion — Surface soil erosion is the wearing away of the earth's surface by water, wind, and gravity and includes rill and gully erosion. "Accelerated" erosion, in excess of "geologic" erosion, results from human activities. Accelerated erosion causes on-site impacts (soil loss, nutrient loss, lower productivity) and off-site impacts (water quality, streambed sedimentation).
- Soil disturbance — certain soil types are sensitive to disturbance from road building and yarding activities. If these sensitive sites are not identified in advance of forest development, then soil compaction, poor drainage, puddling, and soil displacement can result in loss of soil productivity.

The strategy for soil conservation is to:

- Complete harvest plans in accordance with a corporate terrain strategy.
- Assess all sensitive terrain prior to road construction or harvesting to evaluate terrain stability and provide recommendations on:
  - whether or not development should proceed,
  - best road and cutting boundary locations or changes to proposed layout or road alignment,
  - riparian management areas,
  - possible mitigative actions and criteria,
  - road construction or harvesting techniques or constraints.
- Inspect road surfaces, drainage ditches, and culverts regularly and take preventative measures to minimize the potential for debris flow initiation and soil erosion.
- Deactivate roads that are no longer needed for management access, forest protection, or other purposes.
- Re-vegetate soil where there is a potential for erosion to occur and cause sediment transport to fisheries sensitive areas.
- Carry out site sensitivity assessments for soil compaction, soil displacement, surface soil erosion, and forest floor displacement where ground-based harvesting is proposed.
- Maintain the average amount of permanent site degradation below 7% where it is practical and economic.
- Carry out internal and external audits to evaluate road building and stream management practices.

Water Conservation

The Defined Forest Area encompasses four Community Watersheds and two Fisheries Sensitive Watersheds. Government objectives exist for primary forest activities in community and fisheries sensitive watersheds. These objectives center on water quality and quantity, timing of flow, and conserving the integrity of stream channels. The quality of water is determined by drinking water standards in a community watershed and by aquatic standards in watersheds with high fisheries values. In both types of watersheds, sediment input and delivery, and herbicide and fertilizer applications are the primary concerns.

The quantity of water from forest development is primarily focused on the potential changes to peak flows.

Tsawak-qin Forestry Limited Partnership's strategy for water conservation is to:

- Deploy primary forest activity strategies detailed in Sections 4.3.2, 4.3.3, and Appendices C.3 and C.4 of the Forest Stewardship Plan
  Link Address: *https://www.tfl44lp.com/forest-stewardship/forest-stewardship-plan/*
- for community watersheds and fisheries sensitive areas. These strategies include:
  - Conducting a hydrologic evaluation by a qualified professional for new roads and cutblocks.
  - Designing bridges and culverts to a peak flow period of 100 years.
  - Applying road construction strategies and silviculture systems to reduce landslide and sediment delivery potentials to streams.
  - Carrying out erosion control measure utilizing grass seeding, sediment basins, and erosion blankets.
  - Deactivating priority roads to reduce the effects of landslides and soil erosion on fish habitat.

Riparian Management

Riparian areas are used by many species of wildlife. These areas are reserved by way of modified harvest practices in the vicinity of streams. Generally, larger streams have greater levels of retention. Retention of trees may also be required where a stream is dependent on large woody debris for channel stability and/or stream bank stability.

- The Riparian Management Area (RMA) consists of a Riparian Management Zone (RMZ), and where required, a Riparian Reserve Zone (RRZ). The widths of the RMAs are determined by the attributes of the adjacent riparian feature. Attributes such as gradient, fish presence, width of stream, and size of wetland may impact the size of the RMA and the requirement for a RRZ. The widths of Riparian Management Areas are embedded in the Forest Planning and Practices Regulation (FPPR) and carried into Section 4.3 of the Forest Stewardship Plan associated with the Defined Forest Area.
  (FSP Link Address: *https://www.tfl44lp.com/forest-stewardship/forest-stewardship-plan/)*

Riparian management strategies include:

- Wherever possible, locate road to avoid RMAs.
- Propose road locations through RMAs where no other option exists, or where locating the road outside the RMA would create a higher risk of sediment delivery to streams.
- Incorporate wildlife tree retention areas in riparian areas
- Vary retention specifications for RMZs according to site conditions.
- Undertake assessments by a qualified registered professional as necessary.
- Incorporate recommendations of assessments into Harvest Instructions.

Strategies to conserve fish habitat and non-fish streams may include:

- Basal area retention in RMZs based on riparian class and site-specific conditions.
- Partial cutting silviculture systems or no harvest buffers.
- Selecting trees to retain to reduce the risk of windthrow and to conserve wildlife values.

- Where there are significant concerns about windthrow in the RMZ: extend the boundaries of the RMZ to a windfirm boundary; eliminate sharp corners or indentation from the outer boundary of the RMZ; and/or use edge stabilization treatments including feathering, pruning, or topping.
- Additional practices such as: retention of all non-merchantable conifer trees, understory deciduous trees, shrubs, herbaceous vegetation, and high stumps within 5m of the channel to the fullest extent possible; retention of wildlife trees; falling and yarding trees away from the stream; removal of introduced tops and small woody debris; felling of shallow rooted, windthrow-prone leaners across the stream so that the butt clears the channel or the stem spans both streambanks. Stems will be removed from the stream if it can be done without damage to the channel or bank and in compliance with the Fisheries Act.

Forest Growth and Yield Plan

Growth and Yield work continues, subject to government funding. Partially funded studies include:

- The establishment and measurement of one large scale (80 ha) and several edge studies examining the effects of different amounts and patterns of variable retention on growth of the next crop. A small pilot project will be undertaken to monitor (through random samples) the effects of variable retention on growth.
- A core of treated and natural permanent sample plots will be measured on a 10-yr cycle.
- A light model has been developed to examine the impact of variable retention on yield and a moisture sub-model is being developed.

Forest Recreation

Tsawak-qin Forestry Limited Partnership recognizes and supports the responsible use of forests for recreation activities. The Recreation Sector (TPAG) produced a "Recreation Access Inventory". Public access is available throughout the DFA. Some restrictions are applied, especially in active logging areas for safety reasons and protection of equipment. Access may also be limited during periods of high fire hazard.

Tsawak-qin Forestry Limited Partnership's strategy for recreation is to:

- Identify new, significant recreational attractions in the course of inventory or development work and protect them.
- Assist responsible recreationists, authorized organizations, and commercial tour operators in travelling to sites to recreate.
- Restrict access with gates and other measures for safety and protection measures.
- Operate within timing windows where practicable if the recreation resource is temporarily sensitive.
- Rehabilitate trails post harvest and/or assist to relocate government recognized trails to accommodate timber harvesting activities.
- Continue to provide access maps and recreation inventories for the public.
- Work with government and local caving groups to manage and protect sensitive caves and karst resources.

Visual Quality

Visual quality will be managed to achieve established visual quality objectives from significant public viewpoints usually associated with travel corridors, communities, parks, and recreation use

areas. Tsawak-qin Forestry Limited Partnership will work to minimize impacts on timber supply while retaining visual values. This will include:

- Ensuring timber harvesting activities have characteristics consistent with the specified category of alteration ranging from Preservation to Maximum Modification.
- Applying silviculture strategies to reduce the time to achieve visually effective green-up.

First Nations

Tsawak-qin Forestry Limited Partnership recognizes that First Nations have unique rights and interests in land and resources and desires to have a fuller understanding of those rights and interests and seeks reasonable ways to integrate them into its forest resource management and planning processes. Tsawak-qin Forestry Limited Partnership also desires to develop mutually beneficial business relationships with willing First Nations associated with the DFA. Strategies include:

- Sharing our forest management plans and proposed activities with First Nation communities in a mutually agreeable format or established protocol.
- Requesting comments on our plans and proposed activities and seeking acceptance preferably in face to face dialogue.
- Entering into arrangements to protect confidential information.
- Conserving archaeological and other important cultural heritage sites.
- Inviting First Nation communities to explore mutually beneficial business arrangements.

Public Information and Involvement

In keeping with the expressed interest of the public in all aspects of forest resource inventory, management, and use, Tsawak-qin Forestry Limited Partnership:

- Prepares Forest Operations Maps (FOMs) in accordance with The Forest and Range Practices Act (FRPA) as of April 1st, 2024.
- Identifies and advises local and other involved public interest groups, local governments, and interested individuals of opportunities for input to the various planning processes and solicits their feedback.
- Advertises and participates in public information meetings to enable any member of the public to view and respond to forest management planning.
- Responds to invitations to educate local school and community groups on sustainable forest management which at times involves woods and mill tours.
- Financially supports and participates fully in activities of the Tsawak-qin Forestry Advisory Group. TPAG is a facilitated, independent, broad-based community group formed with the express objectives of providing advice to Tsawak-qin Forestry Limited Partnership.

Forest Monitoring & Research

Tsawak-qin Forestry Limited Partnership supports and engages in forest research and monitoring that leads to improved forest management practices. Objectives include sustaining timber supply and economic values, sustaining ecological values and processes, and sustaining social values. The strategy is to:

- Identify knowledge gaps and recommend basic and applied research needs;

- Engage with government, academic, and private agencies that have capacity and mandate to undertake applicable research;
- Support (with letters, in-kind resources, and leverage funding) research funding proposals for projects of particular or strategic interest to the DFA and Tsawak-qin Forestry Limited Partnership as a whole;
- Cooperate with research organizations in conducting basic and applied research; and
- Test and develop practicable applications and uses of published research that are relevant to Tsawak-qin Forestry Limited Partnership's management goals and responsibilities.

Significant areas of research include:

- Forest Ecology – The objectives of the forest ecology research program are to determine the effects of management activities on forest ecosystem functions and components, and to improve our ability to predict ecosystem response. The outcome is development and implementation of ecologically sound silviculture prescriptions.
- Silviculture – The silviculture research program focuses on examining silvicultural practices for regeneration and growth. Objectives of this research are to maintain and enhance timber supply where economically viable to do so. Various trials—some with over 20 years of monitoring—examine species selection, genetic gain for volume and pest tolerance, stock types, mechanical site preparation, vegetation control, and fertilization.
- Forest Growth and Yield & Light Detection and Ranging (LiDAR) – The aim of this program is to quantify forest inventory and growth rates across the range of site conditions on the company's tenure. A recent focus has been to examine the impact of variable retention harvesting and edge effects on early establishment and growth. The company has invested in LiDAR to improve inventory estimates and aid in planning. This investment has been further employed to examine forest ecology knowledge gaps.

Research supported or implemented by the Company occurs across its tenures. In many cases, the findings apply broadly to sites in multiple tenures. The following is a listing of active and ongoing forest management research and monitoring projects in which the company is a lead or major partner; it covers all company tenures and divisions. Those projects which were monitored, measured, or reported on in 2017 are underlined. Funding sources include Natural Science and Engineering Research Council of Canada (NSERC), Land Based Investment Strategy (LBIS), Operational Tree Improvement Program (OTIP), Ministry of Forests, Lands, Natural Resource Operations, and Rural Development (MFLNRO), Canadian Wood Fibre Centre (CWFC) and GenomeBC (and GenomeCanada).

Forest Ecology: Variable Retention Adaptive Management (VRAM)

- Lewis Lake (R885), Moakwa (R1164), Port McNeill (R817), Tsitika (R917), Horseshoe Lake (R949), Goat Island (R1009), Memekay (R1163), Klanawa (R1217) Forest Structure Experimental Sites
- Avian communities, carabid beetles, terrestrial gastropods, small streams
- Monitoring and reporting of operational VRAM applications (2017 – Symmetree - $WFP)

Forest Ecology: Species at Risk

- Northern goshawk site monitoring (2017 – Manning and others – $WFP)
- Northern goshawk population genetics (2017 – Irwin - $CFPA, $GenomeBC)
- Low-level aerial surveys for marbled murrelet habitat in Nimpkish, Artlish and Tahsish landscape units; Henderson and Nitinat landscape units; Barclay Sound landscape units (2017 – $WFP, $FLNRO)
- Owl population monitoring (2017 – Matkoski – $WFP)
- Breeding birds: Population trends and habitat association (2017 – Madrone - $WFP and others)

Silviculture – Resiliency

- Climate change strategies and mitigation
- Climate-based seed transfer – CoAdapTree (2017 – Aitken et al - $WFP, $GenomeBC)
- Western redcedar genomic selection – pest tolerance (2017 – Russell & Bohlmann – $WFP, $GenomeBC)
- Genomic traits in Douglas-fir breeding – pest tolerance (2017 – Stoehr & ElKassaby – $WFP, $GenomeBC)
- Western redcedar browse resistance (2017 – Russell – $WFP

Silviculture: Regeneration and growth

- SCHIRP installation, Transition trials, Kennedy Lake trials, Demonstration trials, *Vaccinium* trials
- Western redcedar – western hemlock fertilization trials (2017 – FLNRO – $MFLNRO; $LBIS)
- Suquash drainage trial
- Planting trials – stock types, fertilization-at-plant, species selection

Silviculture: Seed & Seedling Production

- Douglas-fir pollen dynamics (2017 - $OTIP)
- Western redcedar pollen dynamics (2017 - $OTIP)
- Cone & Seed insect studies (2017 - $WFP)
- Yellow cypress clonal rootability (2017 – $OTIP)
- Douglas-fir nursery trials (2017 – Noshad - $OTIP)

Growth and Yield & Light Detection and Ranging (LiDAR)

- LiDAR Enhanced Forest Inventory Project
- VRAM Regeneration performance
- Nesting habitat for the marbled murrelet Using LiDAR (2017 – UVic Clyde - $WFP, $NSERC)
- LiDAR evaluation of marbled murrelet habitat in Stillwater operations (2017 - $WFP)
- Characterizing streams and riparian areas with airborne laser scanning data (2017 – Tompalski - $CWFC)
- Forest road status assessment using airborne laser scanning (2017 – Waga - $CWFC/UBC)

Glossary

Acronyms

AAC	Annual Allowable Cut	FTE	Full Time Equivalent
ABCFP	Association of BC Forest Professionals	GIS	Geographic Information System
AIA	Archaeological Impact Assessment	GMO	Genetically Modified Organism
AOA	Archaeological Overview Assessments	GPS	Global Positioning System
BEC	Biogeoclimatic Ecosystem Classification	HFN	Huu-ay-aht First Nation
CFS	Canadian Forest Service	HIRMP	Hišuk ma c̓awak Integrated Resource Management Plan
CHR	Cultural Heritage Resources	LRM	Land Resource Manager
CMT	Culturally Modified Tree	LTHL	Long Term Harvest Level
CPD	Continuing Professional Development	MAMU	Marbled Murrelet
CSA	Canadian Standards Association	MFLNRO	Ministry of Forests, Lands, and Natural Resource Operations & Rural Development
CWD	Coarse Woody Debris	MIR	Medical Incident Rate
CWS	Community Watersheds	MP	Management Plan
DFA	Defined Forest Area	NAR	Net Area to Reforest
DFN	Ditidaht First Nation	NCLB	Non-Contributing Land Base
EBITDA	Earnings before Interest, Taxes, Depreciation & Amortization	NSR	Not Sufficiently Restocked
EMS	Environmental Management System	OG	Old Growth
FG	Free Growing	OGMA	Old Growth Management Area
FLP	Forest Landscape Plan	OHS	Occupational Health and Safety
FOM	Forest Operations Map	PAFO	Port Alberni Forest Operations
FPBC	Forest Professionals of BC	PAS	Permanent Access Structure
FPPR	Forest Practice Planning Regulation	PHA	Post Harvest Assessment
FRPA	Forest and Range Practices Act	PMP	Pest Management Plan
FSP	Forest Stewardship Plan	RFT	Registered Forest Technologist
FSW	Fisheries Sensitive Watershed	RG	Forest Regeneration

RMA	Riparian Management Area
RMZ	Riparian Management Zone
RPF	Registered Professional Forester
SFM	Sustainable Forest Management
SFMP	Sustainable Forest Management Plan
SG	Second Growth
SOP	Standard Operating Procedure
SP	Site Plan
SPAR	Seed Planning & Registry (database)
SR	Sufficiently Stocked
SU	Standard Unit
SUP	Special Use Permits
TAUP	Total Area Under Prescription
TFL	Tree Farm License
TFN	Tseshaht First Nation
TPAG	Tsawak-qin Public Advisory Group
TRMS	Terrain Risk Management Strategy
TSA	Timber Supply Analysis
UNDRIP	United Nations Declaration on Rights of Indigenous Peoples
UWR	Ungulate Winter Range
VILUP	Vancouver Island Land Use Plan
VR	Variable Retention
WHA	Wildlife Habitat Area
WIWAG	West Island Woodlands Advisory Group
WTP	Wildlife Tree Patch
WTRA	Wildlife Tree Retention Area
RRZ	Riparian Reserve Zone
SAFE	Safety Accord Forestry Enterprise
SEI	Sensitive Ecosystem Inventory

Definition of terms

The following definitions are supplemental to those found in the Canadian Standards Association (CSA) Z809-16 *Section 3 Definitions and Abbreviations*.

Allowable Annual Cut (AAC): The allowable rate of timber harvest from a specified area of land. The Chief Forester of British Columbia sets AACs for timber supply areas (TSAs) and tree farm licenses (TFLs) in accordance with Section 8 of the Forest Act.

Biogeoclimatic Ecosystem Classification (BEC): Developed in BC in 1965, the BEC System classifies areas of similar regional climate, expected climax plant communities and site factors such as soil moisture and soil nutrients. The subzone is the basic unit of this classification system. Within subzones, variants further identify more local climatic factors. A handbook can be obtained from http://www.for.gov.bc.ca/hfd/pubs/docs/lmh/lmh28/lmh28-01.pdf

Biogeoclimatic zone: a geographic area having similar patterns of energy flow, vegetation and soils as a result of a broadly homogenous macroclimate.

Biogeoclimatic variant: A unit of ecosystem classification reflecting differences in regional climate resulting in differences in vegetation, soil and ecosystem productivity. (See Biogeoclimatic Ecosystem Classification)

Blue-listed: Refers to plants, animals, and plant communities assessed by the BC Conservation Data Centre or COSEWIC to be vulnerable.

CENGEA: Provides resource planning and management software solutions for: Forestry; Agriculture; Bioenergy; Environment & Land Conservation. http://www.cengea.com/

Chief Forester: the assistant deputy minister of the deputy minister of the Ministry of Forests who is responsible for determining allowable annual cuts (AACs).

Coarse Woody Debris: all large dead wood in various stages of decomposition. Note: Coarse woody debris includes standing dead trees, fallen wood, stumps, and roots.

Continuing Professional Development (CPD): The purpose of the CPD program is for registrants to grow, maintain, and demonstrate their level of competence across the span of their professional careers. Every practising RPF and RFT registrant must undertake and report to FPBC 30 hours of CPD between December 1 and November 30 each year. This requirement stems from the Professional Governance Act and FPBC Bylaw 10. https://www.fpbc.ca/professional-development/

Criterion: Under the CSA standard for sustainable forest management, one of six distinguishable SFM characteristics (as defined by the Canadian Council of Forest Ministers: Defining Sustainable Forest Management: A Canadian Approach to Criteria and Indicators, Ottawa, 1995); also, a value that must be considered in setting objectives and in assessing performance.

Critical Element: Under the CSA standard for sustainable forest management, a subsidiary component of a criterion. (See criterion.).

Cultural heritage resource (CHR): An object, a site or the location of a traditional societal practice that is of historical, cultural or archaeological significance to the province, a community or an aboriginal people. Cultural heritage resources include archaeological sites, structural features, heritage landscape features and traditional use sites.

Culturally Modified Tree (CMT): Tree that has been altered by native people as part of their traditional use of the forest.

Cutblock: Defined in the Forest Practices Code of British Columbia Act as a specific area of land identified on a forest development plan, or in a license to cut, road permit, or Christmas tree permit, within which timber is to be or has been harvested. (Also see opening.)

EBITDA: stands for "Earnings Before Interest, Taxes, Depreciation, and Amortization". The equation for calculating EBITDA is: EBITDA = Sales - Cost of Goods Sold (excluding depreciation) - Overhead Costs. Another way to think of EBITDA is that it is a rough measure of the cash flow being generated by an operating unit.

Environmental Management System (EMS): A structured system for identifying and ranking the environmental risk associated with management activities; creating and implementing control methods to manage that risk; monitoring and assessing performance; and taking corrective action to address deficiencies under a continual improvement program.

Fisheries Sensitive Watershed: An area of land (watershed) identified under the Government Actions Regulation comprising both significant fisheries values and sensitivity to forest or range practices (FPPR 2005).

Forest influence area: The area within an opening that is within one tree height of a timber edge.

Forest Landscape Plan (FLP): Forest Landscape Plans (FLPs) establish clear outcomes for the management of forest resource values within defined areas. British Columbia's new forest landscape plans will replace Forest Stewardship Plans (FSPs) as part of changes to BC's forest management regime. https://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/forest-landscape-plans

Forest Operations Map (FOM): The Forest Operations Map (FOM) is intended to enhance transparency of operational planning and to provide engagement opportunities for interested members of the public, and community stakeholders. As of April 1st, 2024, a FOM is legally required in obtaining a cutting permit authority. https://www2.gov.bc.ca/gov/content/environment/natural-resource-stewardship/laws-policies-standards-guidance/legislation-regulation/forest-range-practices-act/frpa-improvement-initiative/forest-operations-map

Forest and Range Practices Act (FRPA): The Forest and Range Practices Act and its regulations govern the activities of forest and range licensees in B.C. The statute sets the requirements for planning, road building, logging, reforestation, and grazing. FRPA and its regulations took effect on Jan. 31, 2004.

Forest Stewardships Plan (FSP): Under the Forest and Range Practices Act and its regulations, all major tenure holders – companies, groups or individuals with logging rights on Crown land – must prepare a forest stewardship plan. The FSP is the cornerstone of the results-based approach governing forest practices under the Act. In their plans, tenure holders must state explicitly how they will address government objectives for key forest values, such as soils and wildlife. These proposals are the "results" of the results-based framework. A FSP must address objectives set by government to preserve the integrity of the environment and to enable sustainable commercial forest and rangeland practices. Tenure holders address these objectives by crafting results or strategies, which are required to be measurable and enforceable, contributing to effective compliance and enforcement by government.

Free Growing: A stand of healthy trees of commercially valuable species, the growth of which is not impeded by competition from plants, shrubs or other trees. Silviculture regulations further define the exact parameters that a stand of trees must meet (such as species, density and size) to be considered free growing.

Goal: A broad, general statement that describes a desired state or condition related to one or more forest values.

Green-up: A reforested cutblock with a stand of trees that has attained the height specified in a higher level plan for the area or that, in the absence of a higher level plan, has attained a height of at least 3 meters is said to have achieved green-up.

Hoe-Chucking: A hoe-chucking operation is where a machine picks up the logs and moves them over the ground so there is little or no ground disturbance.

Inoperable lands: Lands that are unsuited for timber production by virtue of their: elevation; topography; inaccessible location; low value of timber; small size of timber stands; steep or unstable soils that cannot be harvested without serious and irreversible damage to soil or water resources; or designation as parks, wilderness areas, or other uses incompatible with timber production.

Hišuk ma c̓awak Integrated Resource Management Plan (HIRMP): The HIRMP is a coordinated plan for forest and environmental management in the Nation's entire ḥahuułi (traditional territory of the hereditary chiefs). It represents the present and future needs of the ecosystem and the Nation. Its namesake sacred principle Hišuk ma c̓awak, acknowledges the many interconnected aspects considered and incorporated into the plan. https://huuayaht.org/hisuk-ma-c%CC%95awak-integrated-resource-management-plan/

Landing: An area modified as a place to accumulate logs before they are transported.

Land Resource Manager (LRM): Land Resource Manager (LRM) solution is an Enterprise application for managing tabular and spatial information with the land and forest business. https://forestry.trimble.com/wp-content/uploads/2019/02/CFForest_LandResourceManager_DS_ENG_1218.pdf

Landscape level: A watershed, or series of interacting watersheds or other natural ecological units. This term is used for conservation planning and is not associated with visual landscape management.

Landscape unit: For the purpose of the forest practices code, landscape units are planning areas delineated on the basis of topographic or geographic features. Typically they cover a watershed or series of watersheds, and range in size from 5000 to 100 000 ha.

Maa-Nulth Treaty: A modern day treaty that became effective April 1, 2011. There are five Maa-nulth First Nations: Ucluelet First Nation, Huu-ay-aht First Nations, Toquaht Nation, Ka:'yu:'k't'h'/Che:k'tles7et'h' First Nations, and the Uchucklesaht Tribe. All are located on the west coast of Vancouver Island. The Maa-nulth First Nations represent about 2,000 people. Maa-nulth means "villages along the coast" in the Nuu-chah-nulth language. http://www.maanulth.ca/

Mature forest: Stands of timber where the age of the leading species is greater than the specified cutting age. Cutting ages are established to meet forest management objectives.

MIR (Medical Incidence Rate): A recordable measure for which an employee receives first aid, medical aid, or medical treatment for a workplace incident that results in the employee unable to return to their regular duties or is required to performed restricted duties on the advice of a physician. Incidents resulting from a pre-existing injury or for unspecified pain management are not included in the MIR.

Not Satisfactorily Restocked (NSR): Productive forest land that has been denuded and has failed, partially or completely to regenerate either naturally or by planting or seeding to the specified or desired free growing standards for the site.

Opening: Usually used synonymously with cutblock (see above) to include all of an area that has been harvested or is designated for harvesting, including the trees retained singly or in groups within the area, used less often to describe the actual cleared area(s) within a cutblock.

Permanent access structure: A structure, including a road, bridge, landing, gravel pit or other similar structure, that provides access for timber harvesting. It is shown expressly or by necessary implication on a forest development plan, access management plan, logging plan, and road permit or silviculture prescription as remaining operational after timber harvesting activities on the area are complete.

Productive forest: Forest land that is capable of producing a merchantable stand of timber within a defined period of time.

Red-listed: Refers to plants, animals and plant communities assessed by the BC Conservation Data Centre to be extirpated, endangered or threatened.

Reserves: Areas where harvesting is not permitted.

Riparian: An area of land adjacent to a stream, river, lake or wetland that contains vegetation that, due to the presence of water, is distinctly different from the vegetation of adjacent upland areas.

S1-6 stream: Stream classification system for riparian management. S1 to S4 streams are fish streams or streams in a community watershed. S5 and S6 streams are not fish streams and are not in a community watershed. Each class also denotes a range of stream width: S1 is >20m, S2 is >5-20m, S3 is = 1.5-5m and S4 is <1.5m; for streams that are non-fish bearing or not within a community watershed, S5 is >3m and S6 is <3m.

Second growth: Typically younger (i.e., less than 120 years on the BC Coast) forests that have been established by planting and/or natural regeneration after removal of a previous stand by fire, harvesting, insect attack or other cause. (See mature and old growth.)

Sensitive soils: Forest land areas that have a moderate to very high hazard for soil compaction, erosion, displacement, landslides or forest floor displacement.

Silviculture: The art and science of controlling the establishment, growth, composition, health and quality of forests and woodlands. Silviculture entails the manipulation of forest and woodland vegetation in stands and on landscapes to meet the diverse needs and values of landowners and society on a sustainable basis.

Silviculture system: A planned program of treatments throughout the life of the stand to achieve defined objectives. A silviculture system includes harvesting, regeneration and stand-tending. It covers all activities for the entire length of a rotation or cutting cycle. In BC this includes seven major categories: clearcut, patch-cut, coppice, seed tree, shelterwood, retention and selection.

Site series: A unit of ecosystem site classification that represents climatically uniform groups of ecosystems regardless of the actual vegetation residing.

Snag: A large standing dead tree.

Stand level: Level of forest management at which a relatively homogenous land unit can be managed under a single prescription, or a set of treatments, to meet well-defined objectives.

Structural diversity: Variety of canopy layers (vertical structure) and spatial patchiness (horizontal structure).

Timber Supply Analysis: An assessment of future timber supplies over long planning horizons (more than 200 years) by using timber supply models for different scenarios identified in the planning process.

Variable Retention (VR): A relatively new approach to harvesting and silviculture systems that follows nature's model by always retaining part of the forest after harvesting. Standing trees are left in dispersed and/or grouped patterns to meet objectives such as retaining old growth structure, habitat protection and visual quality. Variable retention retains structural features (snags, large woody debris, live trees of varying sizes and canopy levels) as habitat for a host of forest organisms and maintains forest and residual tree influences. There are two main types of variable retention: dispersed retention, which retains individual trees scattered throughout a cutblock, and aggregate (or group) retention, which retains trees in patches of intact forest.

Visual Quality Objective (VQO): An approved resource management objective that reflects a desired level of visual quality based on the physical and sociological characteristics of the area; refers to the degree of acceptable human alteration to the characteristic landscape.

Wildlife tree: A standing live or dead tree with special characteristics that provide valuable habitat for the conservation or enhancement of wildlife.

Windthrow: Trees uprooted as a result of wind events.

Yarding: In logging, the hauling of felled timber to the landing or temporary storage site from where trucks (usually) transport it to the mill site. Yarding methods include cable yarding, ground skidding, and aerial methods such as helicopter yarding.

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