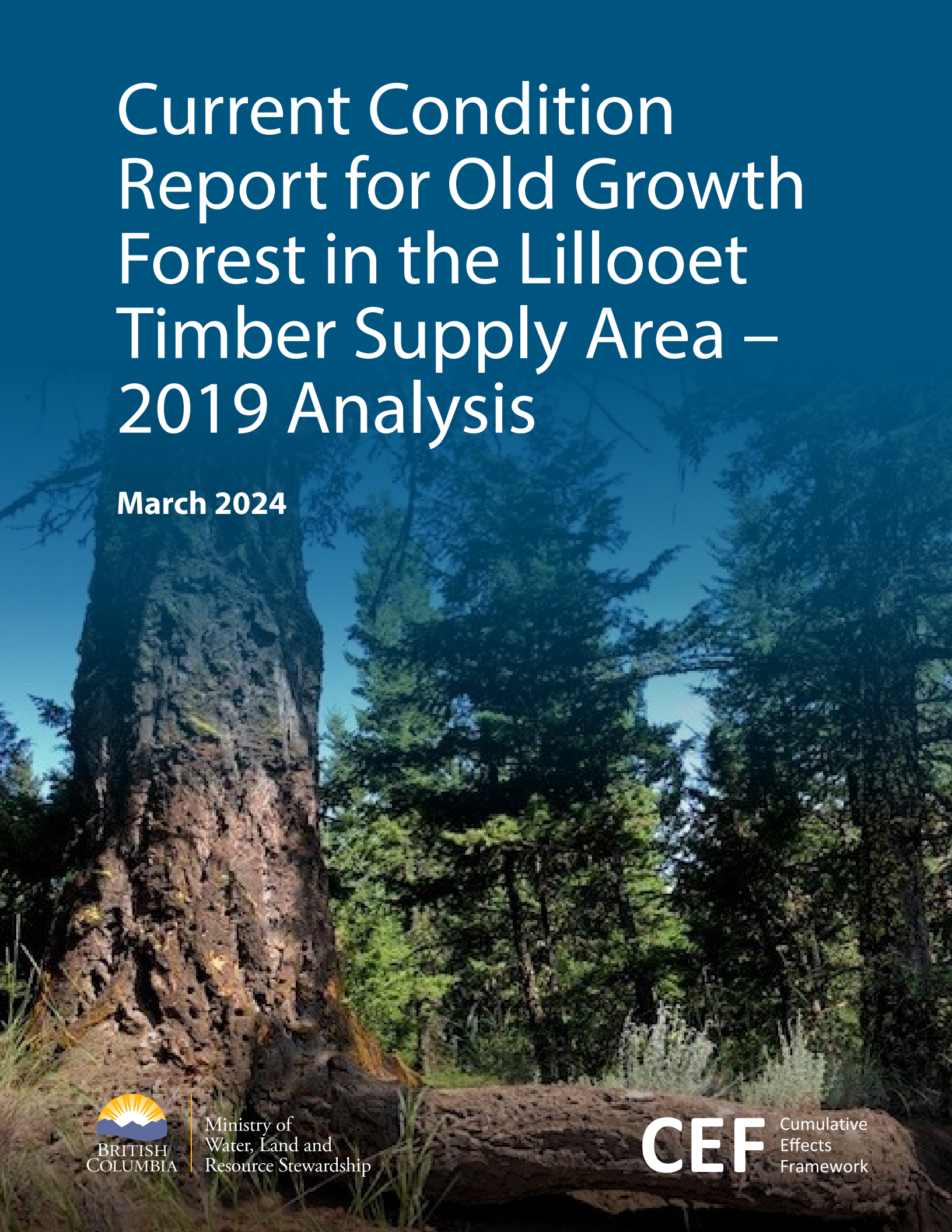
Current Condition Report for Old Growth Forest in the Lillooet Timber Supply Area – 2019 Analysis

March 2024



BRITISH COLUMBIA

Ministry of Water, Land and Resource Stewardship

CEF Cumulative Effects Framework

Citation

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Companion Documents

This assessment uses the following companion documents:

Province of British Columbia. (2016). Cumulative Effects Framework Interim Policy for the Natural Resource Sector. https://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/cumulative-effects/cef-interimpolicy-oct_14_-2_2016_signed.pdf

Province of British Columbia. (2017). Interim Assessment Protocol for Old Growth Forest in British Columbia Version 1.1. https://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/cumulative-effects/interim_old_growth_protocol_v11_jan2018_final.pdf.

Additional background context is also provided:

Ministry of Water, Land and Resource Stewardship (WLRS). (2024). Old Growth Forests in British Columbia: Cumulative Effects Assessment Backgrounder. Victoria, British Columbia. https://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/cumulative-effects/protocols/cef-old-growth-ce-assessment-backgrounder-final-2024.pdf

Ministry of Water, Land and Resource Stewardship (WLRS). (2024). Old Growth Forest Management in British Columbia: Provincial Backgrounder. Victoria, British Columbia. https://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/cumulative-effects/protocols/cef-old-growth-backgrounder-final-2024.pdf

A Note on the Development of this Report

B.C. is committed to collaboration with Indigenous partners on issues related to conservation of biodiversity. This report, and the western science information collected by the Province of B.C. within, seeks to address the questions posed in this assessment. This information will be considered alongside Indigenous knowledge and science, local knowledge, and other western scientific approaches. It is intended to be a starting point in supporting and informing future work and collaboration between the Province and First Nations, and engagement with stakeholders, on the management of cumulative effects.

This report is available to government-to-government tables working on strategic landscape planning initiatives so that these tables can evaluate if and how any of the data, results, or other information contained in this report can support their planning.

Disclaimer

Current condition reports for old growth forest are being prepared by the provincial Cumulative Effects Framework (CEF) within the Ministry of Water, Land and Resource Stewardship (WLRS). These reports require standardized assumptions and methodologies Interim Assessment Protocol for Old Growth Forest in British Columbia (2017) that can be consistently applied across the province. The reports address specific questions about the current condition of indicators for old growth forest, mature-plus-old forest, and old growth management areas (OGMAs). At this stage of reporting, the assessment does not incorporate the consideration of implementation policies such as the application of the rules-based approach from the Landscape Unit Planning Guidebook, OGMA amendment policies, and the contributions of other conservation designations in meeting old growth forest targets.

In this report, the colour scale used for reporting the current condition of old growth forest and mature-plus-old forest does not distinguish between legal and policy targets, as described in the Cumulative Effects Framework Interim Policy for the Natural Resource Sector (2016) and the Old Growth Forests in British Columbia: Cumulative Effects Assessment Backgrounder (2024). This has occurred for several reasons and the decision was based on local discussions. Please see section 4 of this report for further details on the assessment methodology.

Most of the data used in this assessment is publicly accessible information from the B.C. Geographic Warehouse (BCGW) and was extracted in February 2019. One dataset used in this analysis is the provincial Vegetation Resource Inventory (VRI), which is a spatial dataset used to describe where a vegetation resource (i.e., timber volume, tree species) is located and how much of a given resource is within an inventory unit. There are limitations within the vegetation inventory design due to data collection and interpretation methodologies. As such, this dataset is best used for analysis at a strategic and coarse-scale and may present limitations when applied at the operational and site-specific scale. It is recognized that the vintage of this dataset in this assessment may be considered dated (i.e., extracted in 2019); however, it is the starting point for assessing past and present impacts associated with cumulative effects, providing a mechanism for trend analysis going forward.

Acknowledgements

The development of this document involved a coordinated effort from many people at various stages, including the old growth forest analysis, reporting, interpretation, editing, and review. Assessment summaries and observations, including trends identified from CE datasets, were supported by conversations with regional staff. The following people are acknowledged for directly supporting this work: Traci Van Spengen, Darcie Fodor, Felice Griffiths, Melissa Luchetta, Rob Gowan, Lianne Scott, Rob Oostlander, and Chelsea Enslow.

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EXECUTIVE SUMMARY

The Cumulative Effects Framework (CEF) measures the impacts of natural resource activities on values that are important to the people of British Columbia (B.C.). Current condition assessments form the basis for the CEF and reports on the current condition of individual CEF values using indicators to demonstrate the cumulative effects (CE) of multiple natural resource activities on each value. Old growth forest is a provincial CEF value that is important for the conservation and maintenance of biodiversity at all scales.

The current condition assessment describes and reports on the current condition of old growth forest relative to legally defined objectives for old growth forest and policy targets for mature-plus-old forest. It does not consider whether these objectives are effective at conserving sufficient old growth forest to maintain biodiversity, determine the primary causal factors for the current condition (e.g., forest harvesting, natural disturbance), state if assessment units are in compliance with legal objectives and policy targets, or provide management direction to the province, licensees, or others.

Assessment indicators are used to measure and report on the current condition of old growth forest, mature-plus-old forest, and incursions into old growth management areas (OGMAs). The amount of old growth forest within OGMAs is assessed but is not a formal indicator. Old growth and mature forests are defined by age, which is determined by the natural disturbance type (NDT) and biogeoclimatic ecosystem classification (BEC). The CE assessment was completed within the Cumulative Effects Crown Forested Land Base (CE-CFLB) using assessment units (AUs) based on the unique combinations of landscape unit (LU), biodiversity emphasis option (BEO), NDT, and BEC subzone or variant.

Assessment Overview

This CE assessment was completed for the Lillooet Timber Supply Area (TSA) where old growth forest is generally greater than 140 or 250 years old and mature forest is greater than 80 or 120 years old, depending on the NDT and BEC. Old growth forests are managed through non-spatial legal targets established in the Provincial Non-Spatial Old Growth Order (PNOGO, 2004) with spatial non-legal OGMAS in place to manage the intent of PNOGO, therefore this assessment compares the current condition of old growth forest relative to the legal targets established in PNOGO. There is no requirement for the management of mature forest, however, the CE assessment does provide current condition reporting on the mature forest that is guided through non-legal policy targets defined in the Biodiversity Guidebook (BDG, 1995).

There is a total of 551,208.4 hectares (ha) of CE-CFLB in the Lillooet TSA, of which 44,211.2 ha have no old growth forest targets established because it is within NDT5 (alpine or sparsely forested parkland) or a Provincial Park. There are 18 LUs (one of which is the Stein LU that is a Provincial Park and thus has no targets), and the majority of the CE-CFLB is managed as Intermediate and Low BEO (43.7% and 37.1%, respectively). There are 159 AUs with a total of 506,997.2 ha of CE-CFLB with old growth forest targets applied in this assessment.

Assessment Results

The Lillooet TSA has experienced many changes in recent years, in particular due to natural disturbances such as wildfires and mountain pine beetle. Recent wildfires, including the 2021 Lytton Creek and MaKay Creek fires, have resulted in large scale shifts in seral stage distribution and ecosystem composition across much of the TSA. However, age adjustments to seral stage associated with these wildfires are not included in this analysis due to limitations in the Vegetation Resources Inventory dataset.

Old growth forest covers 174,301.3 ha or 31.6% of the CE-CFLB and are generally located in higher elevations in the west and south portions of the TSA. Of the 159 AUs, 100 AUs (63%) have sufficient amounts of old growth forest compared to the defined targets (270,569.1 ha of CE-CFLB). All AUs in the CWH (one AU, 1,223.4 ha of CE-CFLB) and MS (35 AUs, 117,569.7 ha of CE-CFLB) BEC zones, and most of the ESSF (59 AUs, 140,874.9 ha of CE-CFLB), are meeting the targets. Of

the 59 AUs not meeting targets (236,428.1 ha of CE-CFLB), nine AUs have no old growth forest (3,831.9 ha of CE-CFLB). The dry, low elevation ecosystems (IDF and PP) are furthest from the targets (193,902.6 ha and 15,619.0 ha of CE-CFLB, respectively). No LU had all AUs meeting the old growth forest targets.

Mature-plus-old forest covers 395,489.7 ha or 71.7% of the CE-CFLB located across the TSA. Of the 159 AUs, 157 AUs (99%) have sufficient amounts of mature-plus-old forest compared to the targets (506,997.2 ha of CE-CFLB). The two AUs not meeting the policy targets were Kwoiek LU-IDFww (1,441.1 ha of CE-CFLB) and Duffey Lake LU-CWHms (1,223.4 ha of CE-CFLB), the latter of which met the old growth forest target but not the mature-plus-old forest target.

There are 2,458 mapped non-legal OGMAs with a total OGMA area of 74,908.4 ha and 64,729.0 ha of CE-CFLB. There are 562 OGMAs (23% of all OGMAs) that show some level of disturbance, of which 66 OGMAs (3%) have been disturbed beyond the allowable incursion limit, with 144.9 ha of total incurred OGMA. The Bridge, Gun, and Lost Creek are the only LUs where reported incursions do not exceed the allowable limits. Most incursions beyond the allowable limits were due to road development (40.2%) and forest harvesting (e.g., cutblocks) (28.6%), and disturbed less than 5% of the total OGMA area. Some of these incursions are historical and were known and considered acceptable at the time of OGMA delineation.

The majority of OGMAs are old growth (50.7%) and mature (32.1%) seral stage forests. There are 27 AUs that meet old growth forest targets within non-legal OGMAs, and 132 AUs that do not meet the targets within OGMAs, of which 13 AUs have no old growth forest within non-legal OGMAs boundaries. Most of the AUs not meeting the target in OGMAs are in the MS, IDF, and PP BEC zones. While there is sufficient old growth forest in most LUs compared to the targets, it is generally not within the non-legal OGMAs. Therefore, there may be old growth forest available outside the OGMA boundaries that could contribute to old growth forest targets if incorporated into OGMAs.

Opportunities for Improvement

The following opportunities related to old growth forest management are identified for consideration:

1. Review current non-legal OGMA locations and seral stage within OGMAs in AUs that do not contain sufficient old growth forest to meet legal targets. The establishment of OGMAs was intended to retain old growth forest in line with PNOGO targets and should be reviewed to better understand if the intended outcomes are being achieved.
2. This assessment shows a general trend of sufficient old growth forest available across many AUs (i.e., the CE-CFLB across the TSA) but not necessarily within the non-legal OGMAs. Determine if there is an opportunity to adjust the non-legal OGMA boundaries to capture more old growth forest that will better support old growth forest biodiversity objectives.
3. Review the current process in place for the tracking and monitoring of OGMA incursions and amendments to ensure the original intent of the OGMAs are maintained.
4. Identify opportunities to integrate the findings of this report, including the CE assessment results and data into planning and decision-making processes (e.g., Forest Landscape Planning, co-management with First Nations).

LIST OF ACRONYMS

AAC	Allowable Annual Cut
AU	Assessment Unit
B.C.	British Columbia
BCGW	B.C. Geographic Warehouse
BDG	Biodiversity Guidebook
BEC	Biogeoclimatic Ecosystem Classification
BEO	Biodiversity Emphasis Option
CCR	Current Condition Report
CE	Cumulative Effects
CEF	Cumulative Effects Framework
CFLB	Crown Forested Land Base
CE-CFLB	Cumulative Effects Crown Forested Land Base
FAIB	Forest Analysis and Inventory Branch
FMLB	Forest Management Land Base Indicator
FOR	Ministry of Forests
FPC	Forest Practices Code of British Columbia Act
FRPA	Forest and Range Practices Act
FSP	Forest Stewardship Plan
LU	Landscape Unit
LUPG	Landscape Unit Planning Guide
NDT	Natural Disturbance Type
OGAA	Oil and Gas Activities Act
OGMA	Old Growth Management Area
PNOGO	Provincial Non-Spatial Old Growth Order
THLB	Timber Harvesting Land Base
TSA	Timber Supply Area
TSR	Timber Supply Review
VRI	Vegetation Resources Inventory
WLRS	Ministry of Water, Land and Resource Stewardship

Biogeoclimatic Ecosystem Classification (BEC) System

BEC Zones

BAFA	Boreal Altai Fescue Alpine
BG	Bunchgrass
CWH	Coastal Western Hemlock
ESSF	Engelmann Spruce-Subalpine Fir
IDF	Interior Douglas-Fir
IMA	Interior Mountain-heather Alpine
MS	Montane Spruce
PP	Ponderosa Pine

BEC Subzones

dc	Dry cold
dcp	Dry cold parkland
dcw	Dry cold woodland
dk	Dry cool
dm	Dry mild
dv	Dry very cold
dvp	Dry very cold parkland
dvw	Dry very cold woodland
ms	Moist submaritime
mw	Moist warm
mwp	Moist warm parkland
mww	Moist warm woodland
un	Undifferentiated
unp	Undifferentiated and parkland
ww	Wet warm
xc	Very dry cold
xcp	Very dry cold parkland
xcw	Very dry cold woodland
xh	Very dry hot
xk	Very dry cool
xv	Very dry very cold
xvp	Very dry very cold parkland
xvw	Very dry very cold woodland
xw	Very dry warm

BEC Variants

1	Cascade
	Cayoosh
	Southern
	Stein
	Thompson
2	Alkali
	Big Creek
	Cascade
	Stein
	Thompson
	Tyaughton
3	Pavillion
	Fraser
	Tyaughton

GLOSSARY

The following glossary terms are provided for clarity and to aid in understanding the Cumulative Effects Framework. These terms are provided for all CE Assessments and are not specific to the land base identified in this report.

Assessment Units (AU)

Assessment units (AUs) are used to describe the current state of old growth forest on the CE-CFLB in Cumulative Effects reporting. Assessment units are based on the combinations of Landscape Unit (LU), Natural Disturbance Type (NDT), Biodiversity Emphasis Option (BEO), and Biogeoclimatic Ecosystem Classification (BEC) subzone and/or variant.

Biodiversity Emphasis Option (BEO)

A range of management alternatives that emphasize different levels of natural biodiversity within forested landscapes. There are three options for emphasizing biodiversity at the landscape level: high, intermediate, and low. Each option is designed to establish a level of natural biodiversity and a different risk of losing elements of natural biodiversity (Province of B.C., 1995). Overall, the BEO informs the amount of old growth to be retained.

Biogeoclimatic Ecosystem Classification (BEC) system (zone/subzone/variant)

A multi-scaled, hierarchical, ecosystem-based classification system that groups ecologically similar sites based on climate, site, soils, and vegetation, and is widely used as a framework for resource management and scientific research in B.C.

BEC zones have similar patterns of energy flow, vegetation, and soils as a result of a broadly homogeneous macroclimate. There are 16 zones in B.C. which are subdivided into subzones and variants (see List of Acronyms). Subzones reflect differences in regional climate, while variants recognize sub-regional variation (e.g., areas that are slightly drier, wetter, snowier, warmer, or colder than other areas in the subzone) (MFR, 2008).

Crown Forested Land Base (CFLB)

The forested area that the provincial government manages for a variety of natural resources values. This excludes non-vegetated areas (e.g., water, rock, ice), non-forested ecosystems (e.g., grasslands, wetlands), non-productive forest (e.g., alpine, areas with very low productivity), and non-commercial forest (e.g., shrub/brush areas). The CFLB includes provincially and federally protected areas (e.g., provincial and national parks), conservancies, wildlife habitat areas, wildlife management areas, etc., because of their contribution to biodiversity.

Crown Land

Land, whether it is covered by water or not, or an interest in land, recognized in Canadian law as vested in the provincial government of B.C. In B.C., all land categorized as Crown land is also the traditional territory of one or more First Nations (Land Act, RSBC, 1996).

Cumulative Effects

Changes to environmental, social, and economic values caused by the combined effect of past, present, and potential future human activities and natural processes (Province of B.C., 2016).

Cumulative Effects Crown Forested Land Base (CE-CFLB)

Provincial Crown land with forest cover that is managed for timber supply or other forest management objectives. This layer includes all forested Crown land, including Crown Land in area-based tenures (e.g., tree farm licenses, woodlots, community forests, First Nations woodland licenses), and all forested portions of provincial parks, protected areas, ecological reserves, and federal parks that contribute to the current state of old growth forest.

Cumulative Effects Framework (CEF)	A set of policies, procedures, and decision-support tools that help identify and manage cumulative effects consistently and transparently across B.C.'s natural resource sector.
Current Condition Assessment/Report (CCR)	An assessment/report on the current state or condition of individual CEF values in relation to selected state or pressure indicators (Province of B.C., 2016).
Forest Edge	The boundary between a primary forest and newly harvested areas, roads, or other permanently cleared areas where an edge environment is created. This affects the microclimatic conditions (i.e., temperature, wind, moisture) and other attributes (e.g., species composition; processes such as growth rates) and can impact forests up to 100 to 200 meters within the forested area (depending on topography and vegetation). Some plant and animal species can benefit from the microclimate edge effects, while plant and animal species dependent on the stable environmental condition of the interior forest may be impacted (Province of B.C., 1995, Ministry of Forests Research Branch, 1998b).
Forest Management Land Base (FMLB) Indicator	An attribute field in the Vegetation Resources Inventory (VRI) that indicates whether an inventory polygon is currently forested (or has been forested) and is capable of producing a stand of trees. The FMLB is a coarse-scale indicator of forested areas, whereas the CFLB is a finer-scale management tool (see CFLB definition above).
Forest Stewardship Plan (FSP)	A plan which guides forest operations for a timber tenure required under the Forest and Range Practices Act which is prepared by a forest licensee and approved by government.
Fragmentation	The process of transforming large contiguous patches of forest into smaller and isolated patches surrounded by disturbed areas, either through human activities (e.g., roads, forestry cutblocks) or natural disturbances. Fragmentation may lead to a decline in biodiversity through loss of habitat (conversion of forests from natural to managed stands), increase in microclimatic and forest edge effects, and increase in isolation of the remaining forest patches (Province of B.C., 1995).
Incursion	Anthropogenic (human-caused) disturbance footprints within old growth management areas from resource development activities such as forest harvesting, road construction, or mining. It does not include impacts from natural disturbance, such as forest fires or insects.
Interior Forest Condition	The forest habitat beyond the influence of microclimatic other and forest edge effects that sustains the plant and animal communities that depend on stable environmental conditions. It is generally considered to be 100 to 200 meters from the forest edge and can occur in any forest type and forest age (Ministry of Forests Research Branch, 1998b).
Landscape Unit (LU)	An area used for long-term planning and monitoring of resource management activities. These units contain land and water and are typically at the scale of a watershed or a group of watersheds, with areas ranging from 5,000 to 400,000 hectares (MFR, 2008).
Landscape Unit Planning Guide (LUPG)	A guidance document published by the Ministry of Forests and Ministry of Environment, Lands and Parks (1999) that outlines procedures to implement landscape unit planning throughout B.C. (including the development of objectives and strategies). The guide focuses on the priority of forest biodiversity including the retention of old growth forest and guidance for stand-level biodiversity management through wildlife tree retention (Province of B.C., 1999).

Mature Forest

Stands that have progressed through successional development stages including natural thinning. Vertical structure has developed but stands lack the complex structure typical of old growth forests.

The time required for mature forest to develop varies by ecosystem. In B.C., the minimum age of mature forest is 80 years in productive coastal and cool, northern boreal forests, 120 years in high elevation forests, and 100 years in the remaining forests. Mature forest ages are determined by NDT and BEC zone.

Mature-plus-Old Forest

Biodiversity objectives for mature forest retention are set as a minimum requirement for mature-plus-old forest, meaning that retention targets include the minimum requirements for old growth forest plus additional targets that can be met by mature and/or old forest (BDG, 1995). The additional targets for mature-plus-old forest can be met using mature and/or old forest, but the old forest portion of the target must be met using old growth forest (where available). When the mature-plus-old forest target is the same as the old growth forest target, there are no additional requirements for mature forest area. Mature-plus-old targets are specified in the Biodiversity Guidebook but are not required in many regional land use orders, including the Provincial Non-spatial Old Growth Order.

Old Growth Forest

The Province of B.C. defines old growth forest based on age. Minimum ages for old growth forest are greater than 250 years old in ecosystems with infrequent stand-initiating disturbance (coastal, interior wet and moist climates, and dry, fire-maintained ecosystems; NDT 1, 2, 4) and greater than 140 years old in drier ecosystems with frequent stand-initiating disturbance (NDT 3).

These age definitions are intended to capture forests dominated by old trees. Ecologically, old growth forests contain live and dead trees that vary by size, species, composition, and age class structure, which varies significantly by forest type and by BEC unit (BDG, 1995). They are communities of trees, plants, fungi, animals, and microbes that have lived together long enough to develop complex, interconnected relationships (Old Growth Technical Advisory Panel, 2021). Old growth characteristics vary by ecosystem and tree species, and typically have more large trees with unique characteristics such as forked, dead, or broken tops, cavities, or large lateral branches, and more large standing dead trees (snags) and decomposing wood than younger forests (FLNRORD, 2017). Trees are large for the ecosystem, and the forest canopy is often layered with openings that allow light and encourage the growth of understory vegetation.

For the purposes of the CEF, the term "old growth forest" is used to describe these ecosystems more broadly (i.e., considering stand attributes), with the awareness that it includes the "old forest" age-based definition currently used in forest management practices.

Old Growth Management Area (OGMA)

Defined areas that contain (or are managed to attain) specific structural old growth forest attributes. These are delineated and mapped as fixed areas (FPB, 2012). An OGMA may be defined as a legal OGMA or a non-legal OGMA:

Legal OGMA – OGMAs that have been declared in an old growth Ministerial Order. Forest licensees must incorporate the legal OGMAs into Forest Stewardship Plans (FSPs).

Draft (non-legal) OGMA – OGMAs that have been mapped but not declared in an old growth order. Forest licensees may choose to incorporate the non-legal OGMAs into FSPs as a way of achieving the non-spatial order that is in effect in the management area where they operate (FPB, 2012).

Natural Disturbance Type (NDT)

A coarse-level classification system that broadly describes disturbance regimes across B.C. based on the long-term average frequency of stand-initiating disturbances such as wildfires, insects, or wind. Five NDT categories form the basis for the old growth forest targets in the Biodiversity Guidebook (Province of B.C., 1995).

Non-Contributing Land Base

Areas on the land base that are excluded from the Timber Harvesting Land Base (THLB) and do not contribute to the allowable annual cut for a specified area. This includes Parks and Protected Areas, no harvest zones within wildlife management areas (e.g., ungulate winter ranges, wildlife habitat areas), riparian reserves, and inoperable forests.

Non-Spatial Old Growth Management

The percentage or amount (in hectares) of old growth forest to be retained within a specified area (i.e., by BEC subzone/variant in a landscape unit) as an alternative management approach from establishing spatial OGMAs. The amount of old growth forest present in forest stands may be noted by stand age using vegetation inventories, but patches of old growth are not delineated and mapped (FPB, 2012). Non-spatial is also referred to as aspatial.

Primary Forest

A naturally regenerating forest of native species, where there are no visible indications of human activities, and the ecological processes of the forest are not significantly disturbed (FAO & UNEP, 2020). This can include forests across all seral stages, from young to old, and any stands remaining after a natural disturbance such as fire, wind, or extensive insect-caused mortality. Not all primary forests are old, but all old growth is primary forest (Old Growth Technical Advisory Panel, 2021).

Recruitment

The act of identifying stands (either spatially or non-spatially) that do not currently meet the requisite old growth characteristics but are intended to develop those characteristics in the future. In some circumstances, recruitment areas can contribute to old growth targets in landscapes where there is not enough old growth forest to meet targets.

Seral Stage

Represents the different stages in the sequence of forest development, from early to mid, mature, and old forests, including successional shifts in species composition and vegetation structure (e.g., see definitions for mature forest and old growth forest above). Stand age, as reported in the provincial Vegetation Resources Inventory, is used to estimate seral stage.

Spatial Old Growth Management

The process of identifying and delineating areas containing old growth forest attributes. Spatially identifying (i.e., mapping) these areas can lead to their designation as legal or non-legal OGMAs (FPB, 2012).

Stand-Initiating Disturbance	Disturbances that significantly alter the ecosystem and largely terminate the existing forest stand and initiate secondary succession to produce a new stand. This may occur through wildfires, windstorms, insects, and landslides (Province of B.C., 1995).
Stand-Maintaining Disturbance	Fairly frequent disturbances that maintain an ecosystem and keep successional processes stable. This typically occurs through understory surface fires that remove some but not all trees and maintain open forests of old trees (Province of B.C., 1995).
Timber Harvesting Land Base (THLB)	A spatial (mapped) estimate of the forested land area where timber harvesting is considered both acceptable and economically feasible given the objectives for all relevant forest values, existing timber quality, market values, and applicable technology. The THLB is derived from an assessment of forest management practices and assumptions described in a Timber Supply Review (TSR).
Timber Supply Review (TSR)	A process that evaluates all forests within a timber supply area for their contribution to the THLB. At the end of the TSR process, the Chief Forester determines an allowable annual cut (AAC) (i.e., the harvest volume appropriate for an area) based on the amount of timber that is forecast to be available for harvesting over a specified time and under a particular management regime.
Values	The things that the people and government of British Columbia care about and see as important for assuring the integrity and well-being of the province's people and communities, economies, and ecological systems, defined in policy, legislation, or agreements with First Nations (Province of B.C., 2016).

1 INTRODUCTION

The Province of British Columbia (the Province) developed the Cumulative Effects Framework (CEF) to measure the impacts of natural resource activities on values that are important to the people of British Columbia (B.C.). The CEF aims to incorporate the combined effects of all activities and natural processes into decision making to help avoid unintended consequences to identified economic, social, and environmental values.[1] Current condition assessments form the basis for the CEF and reports on the current condition of individual CEF values using indicators to demonstrate the cumulative effects (CE) of multiple natural resource activities on each value.

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Old growth forest is a provincial CEF value that is important for the conservation and maintenance of biodiversity at all scales. This report describes the current condition of old growth forest as part of the provincial CEF and follows the Interim Assessment Protocol for Old Growth Forest in British Columbia (2017). Supplementary documents have also been developed to provide additional context: Old Growth Forest Management in British Columbia: Provincial Backgrounder (2024), and Old Growth Forests in British Columbia: Provincial Cumulative Effects Assessment Backgrounder (2024).

This CE assessment compares the amount of old growth forest currently on the landscape to old growth forest targets. The current condition of old growth forest is assessed relative to legally defined management objectives in legal orders and mature-plus-old forest relative to policy direction. The Provincial Non-Spatial Old Growth Order (PNOGO, 2004) is used as the default for old growth forest legal targets unless a local order or higher-level plan rescinds it, while policy targets from the Biodiversity Guidebook (BDG, 1995) were applied to assess the amount of mature-plus-old forest on the landscape[2].

Assessment indicators were developed to understand the current condition of the old growth forest value:

- the current amount of old growth forest relative to legal targets (PNOGO, 2004);
- the current amount of mature-plus-old forest relative to policy targets (BDG, 1995);
- incursions[3] into Old Growth Management Areas (OGMAs) relative to accepted levels of incursion defined by the applicable order or policy; and
- the current amount of old growth forest in OGMAs as compared to PNOGO.

[1] Under the Cumulative Effects Framework, cumulative effects are defined as changes to environmental, social, and economic values caused by the combined effect of past, present, and potential future human activities and natural processes.

[2] The targets from the PNOGO and the BDG are relatively the same, however there may be some regional variability considered in PNOGO that resulted in modified targets from the BDG (e.g., limiting impact to timber supply).

[3] "Incursions" are defined as alterations to OGMAs caused by permitted activities, such as forestry cutblocks and roads, a range of non-forestry-related industrial activities, and human use features such as recreation sites and trails. To the extent possible, only active, initiated, tenured, and completed developments will be included in the layer and not activities that are conceptual, investigative, or authorized (i.e., project not yet started even though may have permits and/or certificates).

This assessment was completed within the Cumulative Effects Crown Forested Land Base (CE-CFLB). Assessment units (AUs) are based on the unique combinations of landscape unit[4] (LU), natural disturbance type (NDT), biodiversity emphasis option (BEO), and biogeoclimatic ecosystem classification (BEC) subzone or variant.

This report interprets the current condition of old growth forest compared to the legal order targets established, as well as non-legal policy targets for mature-plus-old forest, at a broad level. **It does not consider whether these targets are effective at conserving sufficient old growth forest to maintain biodiversity. If current condition reports indicate that the legal old growth targets are not being met for a specific area, additional analysis and evaluation should occur**[5].

The intended audience for these reports includes government natural resource staff and statutory decision makers who can use it to inform decision-making and collaboration with First Nations in co-management. Other users of this information include natural resource industries and community stakeholders to ensure that cumulative effects are identified, considered, and managed appropriately.

Christine Galliazzo

[4] Landscape units (LUs) are planning areas whose boundaries are based on topographic or other landscape geography features.

[5] The CE old growth current condition assessment reports on the total amount of Cumulative Effects Crown Forested Land Base without differentiating between the non-contributing land base and timber harvesting land base. It does not provide how much old growth forest is within other no-harvest land use designations.

2 LILLOOET TSA OVERVIEW

2.1 Land Base Description

This CE assessment was completed for the Lillooet Timber Supply Area (TSA) which is in the southern interior of the province within the Thompson Okanagan Region (the Region) (Figure 1). The TSA is part of the Cascades Natural Resource District and includes the communities of Lillooet and Lytton. It covers approximately 1.1 million hectares (ha) or 14% of the Region, from the central and eastern Coast Mountains in the west extending to the Chilcotin Plateau to the north and the Thompson Plateau to the east. Within the TSA there are 17 Provincial Parks, Protected Areas, Ecological Reserves or Conservancy Areas, with an additional six that overlap into the TSA (but are not entirely within the TSA). There is a large First Nations population present in the TSA with traditional territories of four Nations: St'at'imc, Nlaka'pamux, Secwepemc, and Tsilhqot'in.

The terrain of the TSA varies from snow-capped mountains, rugged alpine areas, and temperate rainforest conditions in the western portion to semi-arid and dry grasslands at lower elevations typical in the eastern portion of the TSA. This landscape diversity is reflected in the mix of tree species and wildlife habitats present across the TSA. Historically, disturbance events such as wildfires, windthrow, and insects have been the predominant stand-initiating and stand-maintaining natural disturbance events.

There are 25 tree species within the Lillooet TSA listed in the provincial Vegetation Resources Inventory (VRI), with large areas dominated by Douglas-fir, lodgepole pine, sub-alpine fir, spruce, and ponderosa pine, and smaller components of western hemlock, western red cedar, trembling aspen, and other deciduous species. In addition, there is 31,882.9 ha of Whitebark pine leading stands (as designated by the *Species at Risk Act*) primarily in the ESSFdv (Engelmann Spruce-Subalpine Fir Dry Very Cold) and ESSFdvw (Engelmann Spruce-Subalpine Fir Dry Very Cold Woodland) ecosystems. This diversity results in habitats that support a variety of wildlife, including bighorn sheep, mule deer, elk, moose, grizzly bear, spotted owl, coastal tailed frog, bull trout, and Western screech owl.

For the purposes of this CE current condition report on old growth forest, the land base for all data and analyses presented is based on the Cumulative Effects Crown Forested Land Base (CE-CFLB) (Figure 1). The Lillooet TSA contains 551,208.4 ha of CE-CFLB, which is 49% of the gross TSA area (Table 1).

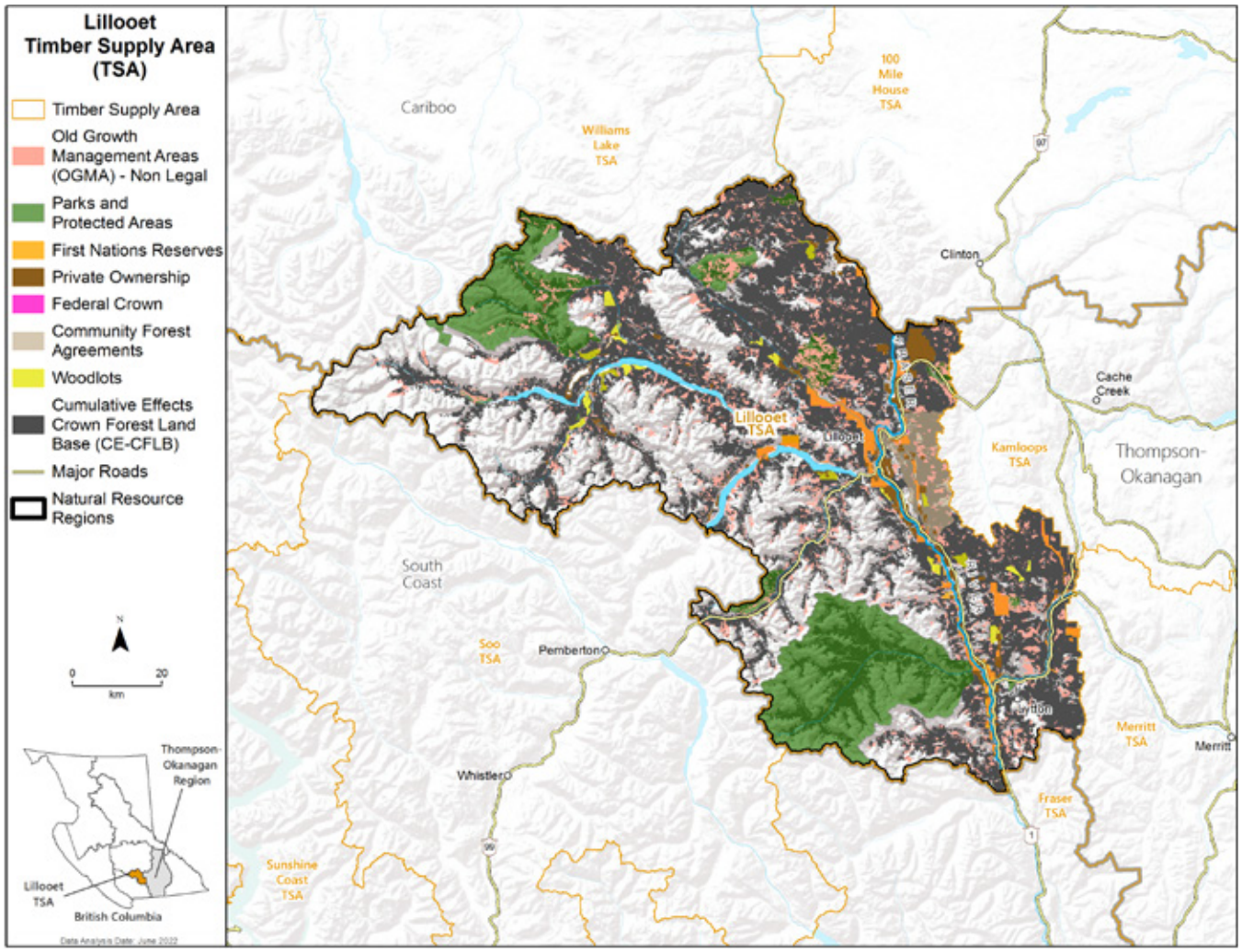


Figure 1. *Ownership and Land Use Classifications in the Lillooet Timber Supply Area (TSA).*

Cumulative Effects Crown Forested Land Base (CE-CFLB) Description

The basic definition of the Crown Forested Land Base (CFLB) is the area of Crown land managed for natural resource values that excludes land ownership (e.g., private land). However, the definition of CFLB can differ across the province and from one provincial initiative to another. For example, the CFLB used in Timber Supply Reviews (TSRs) is different than the definition used for Cumulative Effects (CE) assessments.

The old growth forest CE assessments use the Cumulative Effects Crown Forested Land Base (CE-CFLB) as the denominator to calculate whether old growth forest targets are being achieved. The Forest Management Land Base Indicator (FMLB) is the foundation to developing the CE-CFLB and is an attribute of the Vegetation Resource Inventory (VRI) that identifies whether a polygon is forested or capable of producing a stand of trees. Area-based tenures (e.g., Tree Farm Licenses and Community Forests) that are more than 600 ha are included in the CE-CFLB, except for Woodlots regardless of area (i.e., all Woodlots are excluded from this assessment).

All CE assessment results for this report are generated using the CE-CFLB except for the OGMA incursion indicator which uses the total OGMA area. For more detailed information on how the CE-CFLB was developed and how it differs from CFLBs calculated for other initiatives, refer to Old Growth Forests in British Columbia: Provincial Cumulative Effects Assessment Backgrounder (2024).

The CE-CFLB for the Lillooet TSA is 551,208.4 ha, which is 49% of the gross TSA area (Table 1). For comparison and to demonstrate the difference in CFLB definitions across provincial initiatives, the CFLB used for the 2021 Lillooet TSA Timber Supply Review (currently underway, see the Lillooet TSA Timber Supply Analysis Discussion Paper (August 2022, page 8)) was 513,859 ha. For comparison, the 2009 Lillooet TSA Rationale for AAC Determination identified a CFLB of 528,096 ha (May 2009, page 11).

Table 1. *Summary of Area Designations in the Lillooet Timber Supply Area (TSA).*

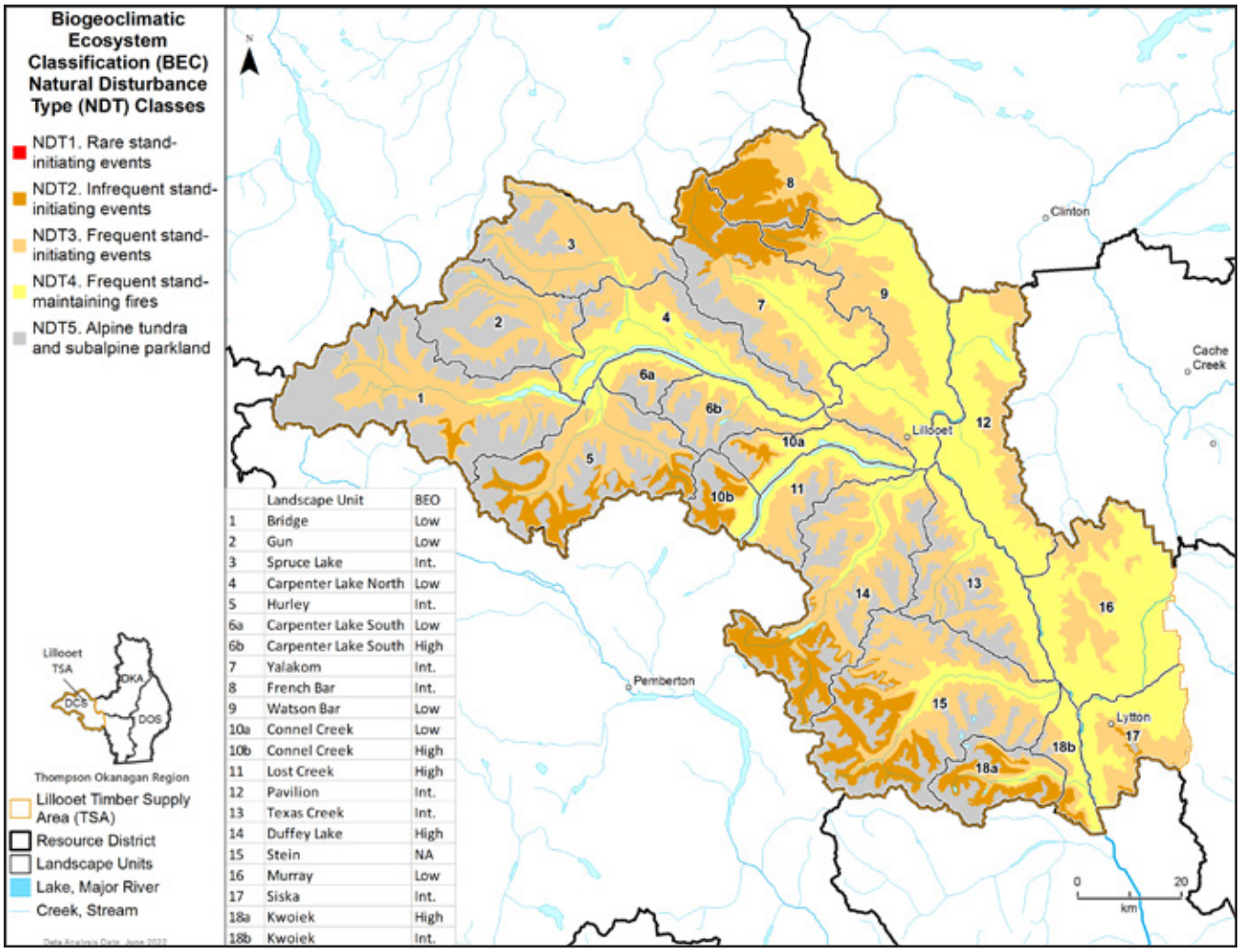
Land Base	Gross Area (ha)[a]	FMLB Area (ha)	Private Land (ha)	Area-Based Tenures (ha)	Provincial Parks & Protected Areas (ha)	CE-CFLB Area (ha)
Lillooet TSA	1,125,024	587,829	26,762	31,433	194,934	551,208.4

[a] There may be overlap between area designations. Therefore, each area value is presented independently of the others in such a way that they do not sum together to equal the gross area of the land base. The information presented is based on the Old Growth Cumulative Effects Crown Forested Land Base (CE-CFLB) and CE Assessment resultant dataset derived from the BCGW VRI (data extracted in 2019).

2.1.1 Natural Disturbance Types

For the purposes of setting old growth forest objectives (i.e., OGMA targets), the BDG recognizes five Natural Disturbance Types (NDT) in B.C. The NDTs characterize areas with different natural disturbance regimes and describe the frequency of stand-initiating events that largely terminate the existing forest structure and initiate secondary succession to start a new stand.

Of the five NDTs classified for the province, four occur in the Lillooet TSA; there is no area in NDT1 (Figure 2, Table 2). The NDT3 (frequent stand-initiating events) and NDT4 (frequent stand-maintaining events) represent the most common natural disturbance types in TSA. The NDT5 ecosystems include alpine BEC zones and sparsely forested parkland BEC variants. Disturbance return intervals and age-based definitions are not defined for NDT5 ecosystems in the BDG.



	Landscape Unit	BEO
1	Bridge	Low
2	Gun	Low
3	Spruce Lake	Int.
4	Carpenter Lake North	Low
5	Hurley	Int.
6a	Carpenter Lake South	Low
6b	Carpenter Lake South	High
7	Yalakom	Int.
8	French Bar	Int.
9	Watson Bar	Low
10a	Connel Creek	Low
10b	Connel Creek	High
11	Lost Creek	High
12	Pavilion	Int.
13	Texas Creek	Int.
14	Duffey Lake	High
15	Stein	NA
16	Murray	Low
17	Siska	Int.
18a	Kwoiek	High
18b	Kwoiek	Int.

***Figure 2**. Distribution of Natural Disturbance Types (NDT) by Landscape Unit (LU) in the Lillooet Timber Supply Area (TSA).*

The total area of the CE-CFLB (551,208.4 ha) is classified by NDT in the Lillooet TSA (Table 2). However, only NDT 2, 3, and 4 contain old growth forest as defined by the PNOGO. The area associated with NDT5 is reported to show the distribution across the land base, however no age or old growth forest targets are assigned to these ecosystems under PNOGO. The total amount of old growth forest in the CE-CFLB within the TSA is 174,301.3 ha.

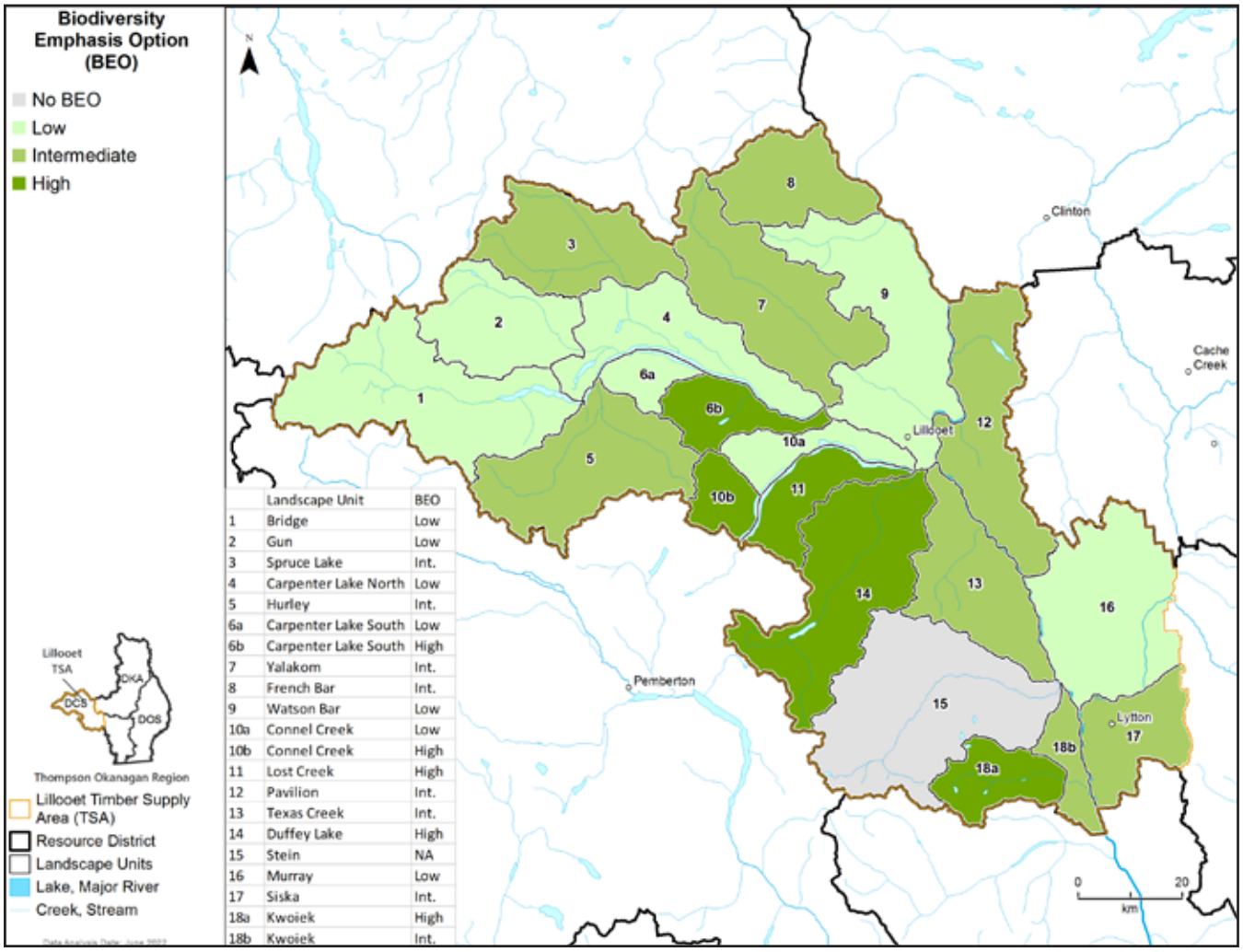
***Table 2.** Distribution of Natural Disturbance Types (NDT) in the Lillooet Timber Supply Area (TSA).*

NDT	NDT Ecosystem Description	Total Gross Area (ha)	Total CE-CFLB Area (ha)	Total Amount of Old Growth Forest in CE-CFLB (ha)
NDT1	Rare stand-initiating events	0	0	0
NDT2	Infrequent stand-initiating events	111,390.8	62,642.5	13,048.9
NDT3	Frequent stand-initiating events	389,716.3	252,037.7	144,457.0
NDT4	Frequent stand-maintaining events	345,084.2	234,294.2	16,795.4
NDT5	Alpine and subalpine parkland	278,833.1	2,234.0	0.0
	Total	**1,125,024.3**	**551,208.4**	**174,301.3**

2.1.2 Biodiversity Emphasis Options

While NDT and BEC provide the ecological basis for natural seral amounts expected under the natural disturbance regime, LU and BEO provide an important administrative basis for setting seral stage targets. Biodiversity emphasis was introduced in the BDG to balance socio-economic interests (primarily timber supply) with the risk of losing elements of natural biodiversity. A High BEO emphasizes a higher priority to biodiversity conservation, an Intermediate BEO reflects a trade-off between biodiversity conservation and timber production and a moderate risk to natural biodiversity, while a Low BEO emphasizes commodity production with less emphasis on biodiversity conservation and thus higher risk to natural biodiversity. The BEO designation determines the minimum required amount of early, mature, and old seral stage forest to maintain biodiversity values in each LU.

Landscape Units (LUs) are planning areas whose boundaries are based on topographic or other landscape geography features. There are 18 LUs within the Lillooet TSA, the majority of which are assigned as Intermediate and Low BEO (Figure 3). There is one LU with no BEO assigned, the Stein LU, because it is entirely within the Stein Valley Nlaka'pamux Heritage Park (referred to as Stein Park in this report). Even though this is a designated LU, no targets were established in this area. Stein Park was included in this report and given the LU number 18 to aid in visualization and as reference for the current condition assessment results (Figure 3, Table 3).



	Landscape Unit	BEO
1	Bridge	Low
2	Gun	Low
3	Spruce Lake	Int.
4	Carpenter Lake North	Low
5	Hurley	Int.
6a	Carpenter Lake South	Low
6b	Carpenter Lake South	High
7	Yalakom	Int.
8	French Bar	Int.
9	Watson Bar	Low
10a	Connel Creek	Low
10b	Connel Creek	High
11	Lost Creek	High
12	Pavilion	Int.
13	Texas Creek	Int.
14	Duffey Lake	High
15	Stein	NA
16	Murray	Low
17	Siska	Int.
18a	Kwoiek	High
18b	Kwoiek	Int.

Figure 3. *Biodiversity Emphasis Option (BEO) by Landscape Unit (LU) in the Lillooet Timber Supply Area (TSA).*

There are three LUs that are assigned multiple BEOs to address local management objectives: Carpenter Lake South (Low and High BEO), Connel Creek (Low and High BEO), and Kwoiek (High and Intermediate BEO) (Table 3).

Table 3. *Biodiversity Emphasis Option (BEO) by Landscape Unit (LU) in the Lillooet Timber Supply Area (TSA).*

Landscape Unit		BEO	Landscape Unit		BEO
1	Bridge	Low	**10b**	Connel Creek	High
2	Gun	Low	**11**	Lost Creek	High
3	Spruce Lake	Intermediate	**12**	Pavilion	Intermediate
4	Carpenter Lake North	Low	**13**	Texas Creek	Intermediate
5	Hurley	Intermediate	**14**	Duffey Lake	High
6a	Carpenter Lake South	Low	**15**	Stein	NA
6b	Carpenter Lake South	High	**16**	Murray	Low
7	Yalakom	Intermediate	**17**	Siska	Intermediate
8	French Bar	Intermediate	**18a**	Kwoiek	High
9	Watson Bar	Low	**18b**	Kwoiek	Intermediate
10a	Connel Creek	Low			

2.1.3 Biogeoclimatic Ecosystem Classifications

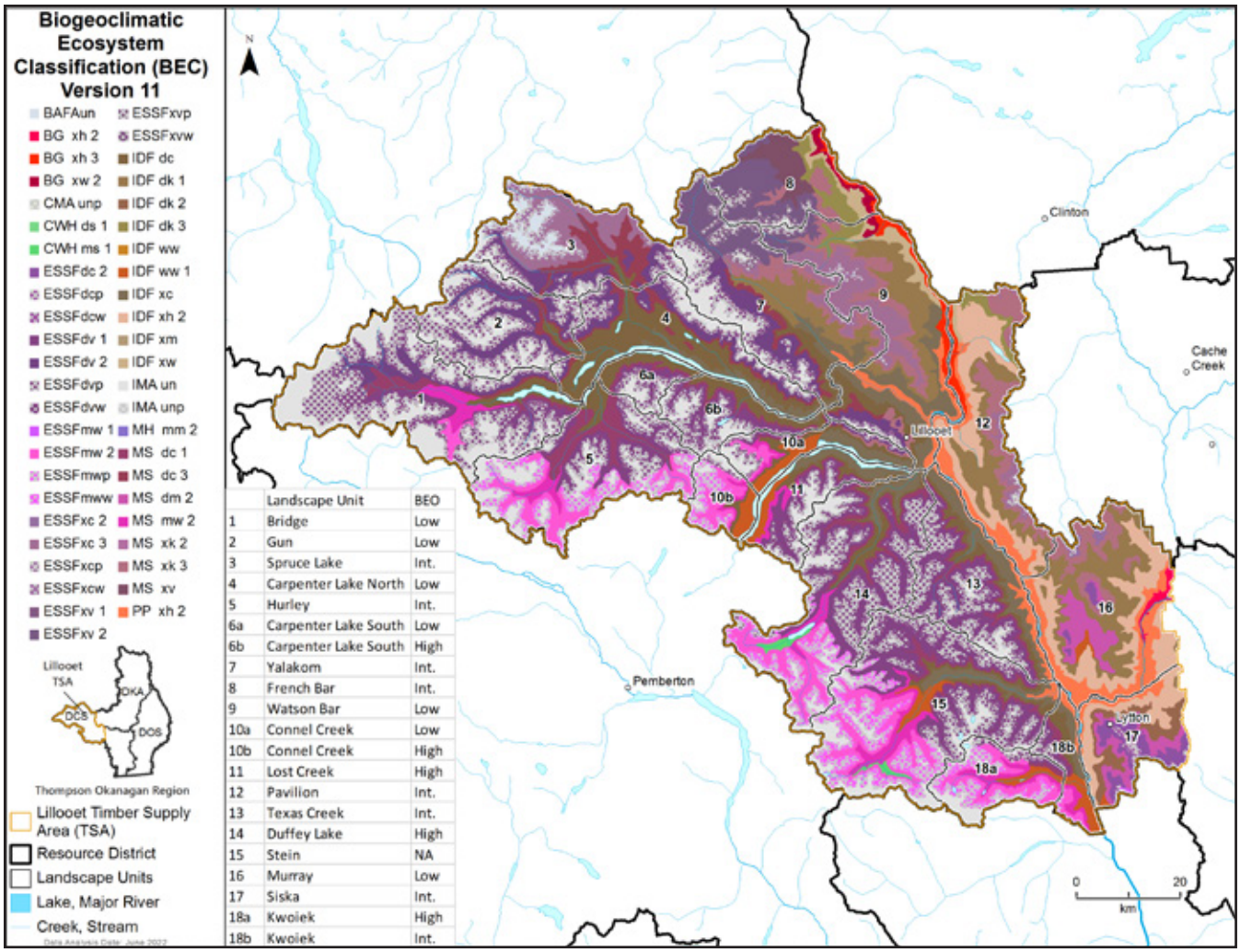
For setting biodiversity and old growth forest objectives, the BEC system is used to spatially define NDTs, recognizing the natural disturbance regime is influenced by differences in climate, topography, and vegetation cover within an NDT. The BEC system consists of the zone (broadest level of classification), followed by up to three more levels of refinement: the subzone, variant, and phase. Detailed information on each BEC unit is available on the BEC Web[6]. Please note that BEC data changes over time as new information becomes available and ecosystem classifications are better understood. At the time of this assessment the latest BEC was version 11.

The BEC subzone variant is the smallest ecological unit that old growth forest objectives are established. Not all BEC units represent forested ecosystems and therefore certain non-forested BEC units may not be included in the assessment of current condition for old growth forest.

The topographically and ecologically diverse landscape of the Lillooet TSA supports a range of BEC zones. The Lillooet TSA includes eight regional BEC zones, which is further refined to 40 unique BEC subzone and variant combinations (Figure 4). Within subzones there can be considerable variations in the regional climate as expressed in variants of drier, wetter, snowier, warmer, or colder.

The TSA is largely occupied by rugged, mountainous terrain which quickly transitions to arid grasslands east of Lillooet. Most of the TSA is within the Engelmann Spruce-Subalpine Fir (513,810.5 ha, 45.7% of the TSA) and Interior Douglas-Fir (291,506.8 ha, 25.9% of the TSA) BEC zones, with the remainder of the TSA largely within the Montane Spruce (147,734.3 ha, 13.1% of the TSA) and the Interior Mountain-heather Alpine (111,241.8 ha, 9.9% of the TSA). The Lillooet TSA is one of the most biologically diverse in the province with representation from over 40 BEC variants, roughly three times the average for an interior area of comparable size.

6 BEC WEB (gov.bc.ca)



	Landscape Unit	BEO
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11	Lost Creek	High
12	Pavilion	Int.
13	Texas Creek	Int.
14	Duffey Lake	High
15	Stein	NA
16	Murray	Low
17	Siska	Int.
18a	Kwoiek	High
18b	Kwoiek	Int.

Figure 4. *Distribution of Biogeoclimatic Ecosystem Classification (BEC) Subzone Variant in the Lillooet Timber Supply Area (TSA).*

2.1.4 Seral Stage

Seral stages are classified using age-based definitions of the minimum age a forest should be before important structural attributes associated with that seral stage are developed in the forest stand. Seral stages and the associated ranges of tree age are technical definitions required for the assessment of inventory data related to old growth forest biodiversity. In this report, seral stage categories are referred to in short-hand (i.e., old, mature, mid-age, and early forests). Stand ages were derived from the 2019 VRI in order to assign a seral stage.

The seral stage distribution across the Lillooet TSA shows general patterns of older and mature forests in higher elevation ecosystems transitioning to younger forests at low elevations across the TSA (Figure 5). The NDT5 is alpine tundra and subalpine parkland which occurs above the tree line; areas categorized as NDT5 were not included in the analysis (shown in light purple in Figure 5).

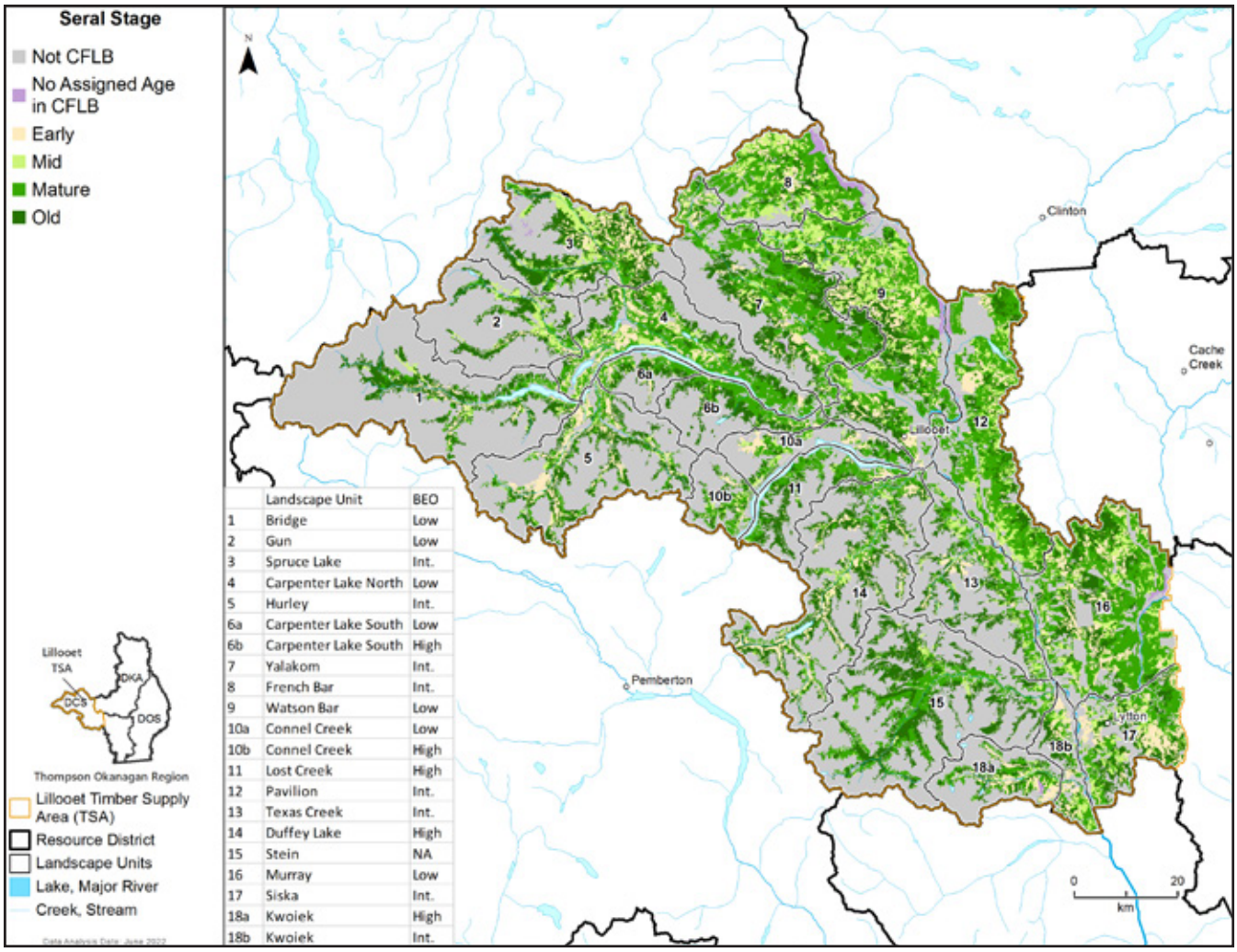


Figure 5. *Current Seral Stage Distribution in the Lillooet Timber Supply Area (TSA).*

Seral stage ages are assigned for 98.6% of the CE-CFLB (Table 4). The remaining 1.4% was either within the bunchgrass BEC zone or the NDT5 being in the CE-CFLB but lacking age-based definitions and targets for old growth forest and mature-plus-old forest (Figure 2, Section 2.1.1).

Table 4. *Current Seral Stage Distribution in the Lillooet Timber Supply Area (TSA) Cumulative Effects Crown Forested Land Base (CE-CFLB).*

Seral Stage[a]	Total CE-CFLB Area (ha)	% of Total CE-CFLB Area
Early	78,241.6	14.2%
Mid	69,737.9	12.7%
Mature	221,188.4	40.1%
Old	174,301.3	31.6%
No seral stage assigned	7,739.2	1.4%
Total	**551,208.4**	**100.0%**

[a] Age definitions that are used to define seral stage were taken from the Provincial VRI (2019). There are different age-based definitions for mature and old forest depending on which NDT and BEC the stand is within.

2.2 Cumulative Effects in the Lillooet TSA

Old growth forests are impacted by multiple resource development activities and natural disturbance events, which may result in cumulative effects. A description of the different activities and natural disturbance events for the Lillooet TSA are outlined below.

2.2.1 Land Use

The economy in the Lillooet area is predominately natural resource based, including forestry, agriculture, mining, and tourism, with forestry continuing to be the largest industry. The TSA has one major timber processing facility, a veneer plant located in Lillooet, and no primary milling facilities, so sawlogs are transported to Merritt for processing (B.C. Ministry of Forests, 2022). The geological and tectonic process in the TSA over millions of years has resulted in areas rich in minerals, however mineral exploration in the area is relatively low. The TSA is connected to the rest of B.C. by four highways and three rail lines.

The Region released An Assessment of Old Growth Management Areas Potentially Impacted by Non-Forest Tenure Activities in the Thompson Okanagan Region (Ministry of Forests, Lands, and Natural Resource Operations, 2013) to review human-caused (anthropogenic) disturbances within OGMAs across the Region from 2006 to 2013. This report indicated the actual area of disturbance in OGMAs from non-forest activities and the overall risk from these tenures was low. At the regional scale, less than 0.2% of the total OGMA area was disturbed by non-forest activities. Most high-risk areas overlapped with *Mines Act* notices of work, utility lines, and roads; the greatest disturbances were from linear corridors. Smaller and narrower OGMAs resulted in more frequent disturbances due to their shape and size and were more likely to require replacement as the incursion threshold was exceeded. It is important to note that some disturbances impact values other than trees, such as riparian areas and soils, while other disturbances have less of a biological impact because they occur in open, dry stands which can mimic the natural openings and disturbances in those ecosystems.

2.2.2 Forest Harvesting

The Lillooet Timber Supply Area (TSA) is the designated area to be managed for a range of objectives including timber production. The Allowable Annual Cut (AAC), which sets the maximum rate of timber harvest for the TSA, has been reduced in the most recent Timber Supply Review (TSR) as the response to the mountain pine beetle epidemic was nearing completion and in recognition of the need for sustainable management of other forest values (Ministry of Forests, 2022). The current AAC was set on May 1, 2009, at 570,000 cubic metres (m^3) of which 400,000 m^3 was specified (partitioned) as harvestable from species other than pine (Ministry of Forests and Range, 2009). In general, the AAC has been decreasing in the TSA since its first establishment in the 1980's, from 800,000 m^3 in 1982 to 635,900 m^3 in 2002 before being further reduced in 2009 to accommodate the issuance of new woodlot licenses and Community Forest Agreements. A TSR was initiated in 2021 to update the timber supply analysis and provide a new AAC; this work is currently underway[7]. In general, the timber harvesting land base (THLB) tends to be in lower elevations mostly due to the steep terrain of the TSA.

[7] Lillooet Timber Supply Area - Province of British Columbia (gov.bc.ca)

In the Region's assessment of OGMAs potentially impacted by non-forest tenure activities from 2006 to 2013 (Ministry of Forests, Lands, and Natural Resource Operations, 2013), the amount of disturbance due to forest harvesting activities was considered (Ministry of Forests, Lands, and Natural Resource Operations, 2013). The assessment showed an overall net increase in total OGMA area (over the Region) due to forestry licensee replacement practices. In general, at the time there had been minimal logging within OGMAs since the non-legal OGMAs were delineated in 2004.

Harvesting forest stands adjacent to old growth forest and OGMAs can have a direct impact to the structure and function of the adjacent old growth forest habitat by increasing the amount of edge forest (Bezzola and Coxson, 2020). Edge effects from forest harvesting can increase the risk of blowdown and invasive species and alter climatic conditions to adjacent ecological communities (i.e., increased light). Forest harvesting patterns can contribute to a fragmented landscape and isolation of OGMAs from other old growth forest patches and reduce connectivity to areas of high biodiversity (e.g., wetland complexes). This can reduce the long-term resiliency of these ecosystems and their ability to adapt to natural disturbances and climate change (Coxson and Werner, 2019).

Non-legal OGMAs were designed in 2004 that were intended to mitigate threats to old growth forest from harvesting. While co-location of old growth forest biodiversity and other non-timber objectives often occurs, the impact of this management decision on old growth forest is yet to be fully understood. In addition, the Independent Old Growth Strategic Panel Report (Gorely, A. & Merkel, G., 2020) commissioned by the Province has recommended a paradigm shift away from the timber-based policies of old growth forest management in B.C. towards prioritizing ecosystem health and resilience.

2.2.3 Natural Disturbances

This Lillooet TSA has experienced many changes in recent years, in particular due to natural disturbances such as wildfires and pest infestations (e.g., mountain pine beetle). There is a long history of wildfire disturbances in the TSA which have resulted in large-scale shifts in seral stage distribution and ecosystem composition across much of the Region.

Historical and recent wildfire disturbances have impacted OGMAs across the TSA. The Region completed an Analysis of OGMA Areas within Fire Perimeters (Ministry of Forests, Lands, and Natural Resource Operations, 2020), and identified that between 2013 and 2019 the total OGMA area impacted by wildfires in the Cascades District (which includes the Merritt and Lillooet TSAs) was 3,419.1 ha. Wildfire disturbance was noted in 107 OGMAs, impacting 3% of all OGMAs in the District. Burn severity ratings for these OGMAs were predominately medium (1,605.5 ha) and high (625.0 ha), followed by unburned (527.2 ha), low (468.2 ha), and unknown (193.3 ha).

Recent wildfires have also affected the TSA resulting in significant losses, most notably during the 2021 wildfire season. The Lytton Creek wildfire complex, which included the Lytton Creek (46,359 ha estimated total burn area within the TSA) and McKay Creek (44,102 ha estimated total burn area) wildfires, impacted over 90,000 ha in the TSA (B.C. Wildfire Service, 2022). These wildfires had significant impacts across the land base, including disturbances within OGMAs. Based on wildfire severity data and the 2021 wildfires that overlapped with OGMAs in the TSA, it is estimated that 7,870.3 ha of OGMAs were burned (4,016.2 ha of high severity, 2,690.3 ha of medium severity, and 1,163.8 ha of low severity), while 3,904 ha of OGMAs were left unburned within the fire perimeter.

How wildfires are represented in this CE assessment is challenging due to the complications of how wildfires are represented in the VRI. Seral stage is based on the ages assigned in the VRI; however, shifts in the age classification of a forested polygon due to natural disturbances (i.e., pests and wildfires) may not be reflected in the assigned ages in the VRI post-disturbance. The seral stage for each forest stand is assigned using the forest age taken from the 'projected age' attribute from the VRI, which is an estimate of the average age of the co-dominant trees in a forested polygon. The 'projected age' is used to represent the time since the last stand-initiating natural disturbance event. Forest inventories are updated annually to revise spatial polygons to include new forest harvesting (e.g., cutblocks) where the age of the forest is reset to a younger age class. However, in the case of natural disturbances, the 'projected age' attribute is not modified until the VRI polygon is re-inventoried. This means that natural disturbances such as fire or insect killed stands that results in a change from old to young forest is only captured in these reports where that has been reflected in the VRI (i.e., once an area is re-inventoried or other forest management activity has occurred).

At this time, there is no Provincial standard or guidance on adjusting stand age based on natural disturbance. Since this CE assessment is reporting the amount of old growth forest against legal and policy targets, it does not attempt to make a determination on age adjustment and uses the stand ages from the VRI. **Because changes in age due to natural disturbances are not immediately reflected in the VRI, the amount of old growth forest (or mature-plus-old forest) may be over-estimated, while the amount of early forest may be under-estimated**.

2.2.4 Climate Change

A key area of uncertainty is climate change and the potential rate, amount, and characteristics of climate change impacts that can be anticipated. The Region has already experienced a warming trend of just over 1°C in the last century, with this warming trend greater over the 1951-2009 period (PCIC, 2013). Precipitation has also been increasing in all seasons during this period. However, these trends are regional averages and locations with complex topography could vary considerably with elevation.

Climate change projections suggest the Region will warm on average between 1.6 and 4.4°C by the end of this century (PCIC, 2013; Government of Canada, 2020). Temperatures will warm year-round with hotter summers expected to be more pronounced in valley bottoms. This may result in longer warm seasons, including earlier springs and later fall conditions, and shorter cold seasons over time. Precipitation projections show a modest increase (10%) in all seasons except summer which will remain the driest season (decrease 10%). This, in concert with hotter temperatures, will increase evaporation rates and create even drier, hotter summers than currently experienced. Changes in precipitation are likely to cause more frequent flooding and landslide events, reduced snowpack, and changes to quantity and timing of stream flows, which in turn increases stress to ecosystems and infrastructure.

Forests are vulnerable where the natural disturbance regime is projected to change; for example, from a gap-dynamic dominated system to a stand-replacing disturbance regime. Increased temperatures may result in more frequent and longer insect outbreaks that pose a higher risk to increasingly drought-stressed stands. Tree mortality may increase because of increased forest health risks exacerbated by drought stress and severe disturbance events (e.g., catastrophic wildfire, windstorms). Increased precipitation may result in more frequent and intensification of tree infection by forest pathogens adding to tree stress. Extreme weather events will increase the risk of flooding and potentially trigger mass movements in steep terrain, particularly during rapid melt periods. Given the complexity of variables, the potential for unanticipated outcomes and cumulative effects is high (Sturrock et al., 2011).

3 OLD GROWTH FOREST MANAGEMENT IN THE LILLOOET TSA

In the Lillooet TSA, old growth forests are managed through two mechanisms: non-legal OGMAs and non-spatial legal old growth forest targets. Non-legally established OGMAs occur across all LUs except the Stein LU (which is a Park). Refer to Appendix 3 (Table 23) for a complete summary of the old growth forest targets by assessment unit (AU) for the Lillooet TSA.

Management of mature forest for recruitment into old growth forest is guided through non-legal policy targets, as defined in the BDG. Management of mature forest for forest biodiversity on the landscape has not been a priority or legally established in the Lillooet TSA or most of the province. The inclusion of mature-plus-old forest as a CE assessment indicator for old growth forest provides additional information and clarification on the current condition of forest seral stages that may contribute to old growth forest values (see Section 2.1.4). More information on old growth forest management in B.C. is provided in the Old Growth Forest Management in British Columbia: Provincial Backgrounder (2024).

3.1 Legal Old Growth Order

In the Lillooet TSA, old growth forests are managed the following way:

1. Non-spatial old forest targets legally established through the Provincial Non-Spatial Old Growth Order (PNOGO, 2004) that set the percent retention targets; and
2. Spatial non-legal OGMAs intended to manage the old growth targets under PNOGO.

The PNOGO provides the consistent foundation of non-spatial legal targets for old growth forest management in the Lillooet TSA and remains the legal direction in LUs where there are no legal OGMAs. Spatial non-legal OGMAs were initially established in 2004 on approximately 72,000 ha across the TSA; however, these were not legally designated under PNOGO Section 8. Licensees are not obligated to use these spatial non-legal OGMAs in their Forest Stewardship Plans (FSPs) if they can demonstrate how other strategies are implemented to meet old growth forest objectives. However, forest licensees have incorporated these spatial non-legal OGMAs into their current FSPs.

The Landscape Unit Planning Guide (LUPG, 1999) provided a strict "rules-based" approach on how OGMAs were to be designed to mitigate impacts on timber supply (i.e., no more than 4% impact to timber supply). This required that all old growth forest retention targets be met (i.e., co-located) in areas with harvesting restrictions first (e.g., Parks, Ecological Reserves, Wildlife Habitat Areas, Ungulate Winter Ranges). Only after the old growth target is co-located could the remaining target area be designed as spatial OGMAs in that LU-BEC. If there was not enough old growth forest in the LU-BEC to meet the target, then the next oldest available forest (generally mature forest) could be recruited.

3.1.1 Old Growth Forest Targets

In the Lillooet TSA, the old growth forest targets used to guide the amount of old growth forest required in non-legal OGMAs originated from the PNOGO. Old growth forest targets are set in PNOGO by LU for each NDT, BEC, and BEO combination with targets defined by forest age. The PNOGO targets provide a consistent foundation for current condition reporting of old growth forest as it establishes the minimum percent threshold for old growth forest representation that should be achieved in each AU.

The PNOGO includes the option to reduce old forest retention in LUs with Low BEO by up to 2/3 and full targets do not need to be met for 240 years as a means to avoid impacting timber supply[8]. This 2/3 "draw down" is described further in the LUPG (1999) with the intent that full targets will be achieved by the end of the third rotation (i.e., 240 years). **This CE assessment compares to the full old growth forest targets and does not consider the 2/3 drawdown allowed in Low BEO**s. In the Lillooet TSA, the allowable 2/3 drawdown was not implemented when OGMAs were delineated, and the TSA has been managing to the full old growth forest retention targets.

Table 5 only includes the NDT/BEC/BEOs that have targets provided in PNOGO. There is no NDT1 in the TSA, and NDT5 has been excluded as no targets are established for alpine tundra and subalpine parklands. In addition, portions of the BG BEC zone that occur in NDT 4 have also been excluded as no targets are established in these ecosystems.

Table 5. *Old Growth Forest Targets (%) by Biodiversity Emphasis Option (BEO) and Biogeoclimatic Ecosystem Classification (BEC) Zone in the Lillooet Timber Supply Area (TSA).*

Natural Disturbance Type (NDT)	BEC Zone	PNOGO Target % Old Growth Retention			Old Growth Forest Age Definition (years)[a]
		Low BEO	Intermediate BEO	High BEO	
NDT2	CWH	9	9	13	>250
	ESSF	9	9	13	>250
NDT3	ESSF	14	14	21	>140
	MS	14	14	21	>140
NDT4	IDF	13	13	19	>250
	PP	13	13	19	>250

[a] Old growth forest age definitions are from PNOGO (2004).

3.1.2 OGMA Incursions and Amendments

It is common for OGMAs to have historic anthropogenic incursions and natural disturbances included within the OGMA boundary at the time of legal establishment[9]. Natural disturbances such as fires, insects, pathogens, and wind will alter forest stand composition within OGMAs over time. These changes are expected to be most evident in ecosystems with frequent stand-initiating events (NDT3); however, disturbances will naturally occur in all ecosystems. There are several reasons why incursions into OGMAs are expected due to forest management practices, which include:

- Response to natural disturbances to control a forest health threat within an OGMAs to the adjacent areas.
- Field checking and verification of OGMA forest conditions and boundaries may not have been completed at time of establishment. Operational adjustments to OGMA boundaries may have been required to align with the geographic features.
- Access issues that were unknown at the time of OGMA delineation (e.g., develop safe routes, to access timber beyond the OGMA where no other practicable option exists), as well as to improve access to non-forest resources (e.g., independent power projects, oil and gas, mining, and commercial tourism).
- Result of forestry-related activities, such as requests to improve layout of cutblock boundaries or to address operational considerations that were not known at the time of OGMA delineation.
- New or improved mapping data or information (e.g., more accurate VRI, BEC, wildlife mapping) may warrant minor adjustments to OGMA boundaries that improves value of the OGMA.

[8] Implementation of the BDG was limited to a 4% impact on provincial timber supply as outlined in the 1996 Forest Practices Code Timber Supply Analysis. The old growth forest targets in the BDG were a negotiated outcome that deviated from expected natural conditions. Impacts to timber supply were further tempered by directing assignment of BEOs to each LU based on a distribution of 45% in Low BEO, 45% in Intermediate BEO, and 10% in High BEO.

[9] The Interim CE Old Growth Assessment Protocol defines incursions as anthropogenic (human caused) disturbance footprints that are within the legal or non-legal OGMA boundary. These can include roads, cutblocks, and oil and gas developments. Natural disturbances such as fire, insect, and wind events are not considered incursions under this assessment.

Allowable OGMA incursions and amendments are managed through the Old Growth Management Area Guidance Thompson Okanagan (ILMB, 2007) Regional OGMA guidance document. This guidance applies where there are no legal orders with provisions for OGMA incursions, therefore it is the guidance applied to the Lillooet TSA. **This Regional OGMA policy provides objectives that allow incursions for very specific reasons up to 10 ha or 10% of the area of the OGMA, whichever is less, for any single OGMA**. Any incursion beyond this threshold would likely result in the OGMA being replaced with an ecologically suitable area.

In some cases, and for various reasons, OGMAs were established with known incursions. This was dependent on the process undertaken at the time of OGMA development, which included working in partnership with forest licensees, the requirement to minimize operational impacts while ensuring future timber supply was not isolated, inclusion of First Nations interests, and comments from the public review process. OGMAs were intended to have long-term monitoring to 1) ensure the intent of the PNOGO objectives were being achieved, 2) track incursions into OGMAs against the allowable threshold, and 3) determine if OGMAs need to be amended or replaced if allowable incursion thresholds were exceeded. However, such monitoring of effectiveness and incursions has not occurred in the Lillooet TSA to date.

Through the OGMA establishment process, the LUPG included the provision that OGMAs will not have an impact on the status of existing mineral and gas permits and tenures. As such, these related exploration and development activities are permitted in OGMAs. These activities may proceed to the point of significantly impacting old growth forest values within OGMAs, and even though the activities are exempt from the Orders, OGMA amendment and replacement should be considered.

3.2 Non-Legal Old Growth Policy

Provincial direction under the LUPG (1999) prioritized the management of the old growth forest value and at the time of the PNOGO establishment, mature-plus-old targets were not considered. Consequently, mature-plus-old forest targets are not legal requirements in the Lillooet TSA. Even though mature-plus-old policy targets are not legally required, an assessment is provided to better understand the current state of mature forest and where it may be available for recruitment to achieve old forest targets, particularly where old forest is poorly represented, or OGMAs may need to be replaced. The Biodiversity Guidebook (BDG, 1995) provides policy targets used in this assessment. Refer to Appendix 3 (Table 24) for a complete summary of the mature-plus-old forest targets by AU for the Lillooet TSA.

3.2.1 Mature-plus-Old Targets

Mature-plus-old forest policy targets are set in the BDG by LU for each NDT, BEC, and BEO combination with targets defined by forest age (Table 6). Targets are incremental to old forest targets; additional old forest can be substituted for mature forest to meet targets, but mature forest cannot be substituted for old growth forest without an approved recruitment strategy. Younger stands may be used to meet old or mature-plus-old forest targets provided they have sufficient biological value. **However, this assessment does not report on the ecological and biological effectiveness of these younger stands that may be contributing to mature-plus-old forest targets**.

As with the old growth forest targets, Table 6 only includes the NDT/BEC/BEOs that have targets provided in PNOGO. The NDT5 has been excluded from this table as no targets are established for alpine tundra and subalpine parklands.

Table 6. *Mature-plus-Old Forest Policy Targets (%) by Biodiversity Emphasis Option (BEO) and Biogeoclimatic Ecosystem Classification (BEC) Zone in the Lillooet Timber Supply Area (TSA).*

Natural Disturbance Type (NDT)	BEC Zone	Policy Target: % Mature-plus-Old Growth Forest Retention			Mature-plus-Old Growth Forest Age Definition (years)[a]
		Low BEO	Intermediate BEO	High BEO	
NDT2	CWH	17	34	51	>80
	ESSF	14	28	42	>120
NDT3	ESSF	14	23	34	>120
	MS	14	26	39	>100
NDT4	IDF	17	34	51	>100
	PP	17	34	51	>100

[a] Mature-plus-old growth forest age definitions are from BDG (1995).

4 CURRENT CONDITION ASSESSMENT METHODOLOGY

The CEF Interim Assessment Protocol for Old Growth Forest in British Columbia (2017) provides a foundation for a provincially consistent approach to assessing the current condition of old growth forest in B.C. The methodology, data sources, assumptions and limitations for these assessments are provided in the protocol, as well as the Old Growth Forests in British Columbia: Provincial Cumulative Effects Assessment Backgrounder (2024).

The assessment indicators for the old growth forest value are used in a non-spatial assessment to produce quantitative results that highlight the current condition of old growth forest compared to legal or policy targets. The results and discussion presented in this report are based on the data and information at the time of the assessment (2019). Changes have occurred on the land base since which may have had significant impacts that are not represented in these assessment results.

The non-spatial area (hectares) of old growth forest is a numerical reporting that does not reflect the ecological integrity of the old growth forest biodiversity in the AU. Further inquiry into the ecological integrity and function of the remaining old growth forest is recommended, along with determining potential mitigation or management responses.

Additionally, this current condition reporting does not quantify the specific anthropogenic disturbance (ha) contributing to the seral stage assessment for old growth and mature-plus-old forest. The assessment information presented in the following sections is reporting on specific indicators in an objective and transparent manner to support future planning processes and decision making regarding old growth forest management.

4.1 Assessment Indicators

The current condition of old growth forest was assessed using the indicators from the Interim Assessment Protocol for Old Growth Forest in British Columbia (2017) (Table 7). Each indicator provides specific information to inform the assessment of the current condition of old growth forest in the CE-CFLB. An additional assessment of the amount of old growth forest in OGMAs and the proportion of this old growth forest that meets the PNOGO target is reported to provide the current condition of OGMAs. The results from this assessment are reported by AU at multiple scales that combine LU, BEO, NDT and BEC to the subzone or variant (Table 7).

In this report, the colour scale used for reporting the current condition of old growth forest and mature-plus-old forest does not distinguish between legal and policy targets, as described in the Cumulative Effects Framework Interim Policy for the Natural Resource Sector (2016) and the Old Growth Forests in British Columbia: Cumulative Effects Assessment Backgrounder (2024). This has occurred for several reasons and the decision was based on local discussions. There was a desire from Region to use a consistent colour scheme across all land bases and indicators, regardless of whether the targets were established through a legal or policy mechanism. As a result, the "red-green" colour scale identified in the Assessment Backgrounder has been used for the current condition of old growth forest and mature-plus-old growth forest indicators.

Table 7. *Cumulative Effects Assessment Indicators used to Assess the Current Condition of Old Growth Forest in the Cumulative Effects Crown Forested Land Base (CE-CFLB) by Assessment Unit (AU).*

Indicator	Assessment Questions
Current Condition of Old Growth Forest Retention	
Amount of Old Growth Forest	• What is the current amount of old growth forest in the CE-CFLB? Where is old growth forest located on the land base? • Which AUs meet the legal targets for old growth forest? • Which AUs are flagged for further consideration? • What are some of the possible reasons for the current condition?
Amount of Mature-plus-Old Forest	• What is the current amount of mature-plus-old forest in the CE-CFLB? Where is mature-plus-old forest located on the land base? • Which AUs meet the policy targets with mature-plus-old forest? • Which AUs are flagged for further consideration? • What are some of the possible reasons for the current condition?
Incursions into Old Growth Management Areas (OGMAs)[a]	
Incursions into Legal and Non-Legal OGMAs	• Are there anthropogenic incursions in OGMAs? What is the current amount of incursion into OGMAs in the CE-CFLB? • Do incursions exceed the Order threshold? • What is the type of incursion into OGMAs? • What is the magnitude of incursions into OGMAs (total % incurred)?
Current Condition of Old Growth Management Areas (OGMAs) – additional indicator	
Amount of Old Growth Forest in Legal and Non-Legal OGMAs	• What is the current amount of old growth forest in OGMAs in the CE-CFLB? What is the seral stage breakdown? Where is old growth forest located within OGMAs? • Which OGMAs meet and do not meet PNOGO targets by BEC subzone or variant within each LU?

[a] For this assessment indicator, incursions into OGMAs are defined as anthropogenic disturbance footprints resulting from resource development activities and do not include natural disturbance like wildfires and insects.

4.2 Assessment Units

Assessment units (AUs) are defined by combinations of LU, NDT, BEO, and BEC to the subzone or variant. These units reflect the scale at which legal and policy targets for old growth retention are applied (e.g., in PNOGO and BDG). In this report, these AUs are used to report on the current state of old growth forest on the CE-CFLB as per the indicators described in Section 4.1. This report summarizes the results by LU, BEO and BEC subzone/variant, to aid in understanding the current state of old growth forest at multiple scales. A gradient colour scale is used to illustrate the current condition of the old growth forest and mature-plus-old forest indicators (Table 8).

Table 8. *Colour Scale for Interpreting Current Condition Maps and Target Status Categories as a Percentage of Legal (PNOGO) or Policy (BDG) Targets Met.*

Gradient Scale for Old Growth and Mature-plus-Old Forest Indicators: Legal and Policy Targets	Indicator Condition Interpretation	Current Condition Status (% of Target Met with Old or Mature-plus-Old Forest)	Analysis Definition (% of Target Met with Old or Mature-plus-Old Forest)
	Below Target	0 – 30%	0 – 29.99%
	Below Target	30 – 50%	30 – 49.99%
	Below Target	50 – 75%	50 – 74.99%
	Below Target	75 – 100%	75 – 99.99%
	Target Met	100 – 110%	100 – 109.99%
	Above Target	110 – 125%	110 – 124.99%
	Above Target	125+%	125+%

4.3 Assessment Data

Consolidating all resource developments was necessary to assess the current condition of old growth forests on the landscape. As such, consolidated disturbance layers were developed specifically to address CE on all Provincial CEF values, including old growth forest. The source of data to support this analysis is from the 2019 BC Cumulative Effects Human Disturbance with Baseline Thematic Mapping (also known as CE Human Disturbance Layer) and the 2019 BC Cumulative Effects Integrated Road (also known as CE Road Layer) datasets. These datasets were consolidated from publicly accessible data repositories, mainly the BC Geographic Warehouse (BCGW). The assessment did not consider natural disturbances (i.e., wildfires or insect outbreaks) that were not included in the VRI at the time of data extraction from the BCGW (2019).

4.3.1 OGMA Incursions

The CE assessment compares the area of anthropogenic (human-caused) disturbance footprint (i.e., incursions) in OGMAs relative to allowable incursions specified in the applicable order, policy, or guidance. Incursions are defined as alterations to OGMAs caused by resource development activities that permanently alter the forested land base or that convert forests to an early seral stage (i.e., less than 40 years old). Resource development activities include permitted forestry activities (i.e., cutblocks and roads), non-forestry-related activities (e.g., pipelines, oil and gas, mining, fire guards, urban development, land tenuring), and other human use features (i.e., recreation sites and trails). Source data of these activities was combined into the CE Human Disturbance Layer (2019) used to support this assessment.

In the assessment, disturbances include only active, initiated, tenured, and completed developments, and does not consider proposed or anticipated projects and activities at the time of the assessment. The exception to this is roads due to variation in accuracy of spatial road data. For example, there may be roads represented in the data that were not built on the ground or had variable road widths based on the local terrain. In the analysis, roads were applied

various buffer widths, ranging from 5 to 60 metres, depending on the source data attributes, input from Regional staff, existing methodology, and satellite imagery. As a result, the road dataset may be incorrect or incomplete as all roads are represented in the data regardless of whether the road was developed or not.

Road disturbances are sourced from a variety of road-related datasets including Forest Tenures (FTEN), Digital Road Atlas (DRA), Reporting Silviculture Updates and Land Status Tracking System (RESULTS), and the Oil and Gas Commission. These inputs were combined into the CE Integrated Roads Layer (2019). These source datasets include other linear features, such as fire guards, operational skid trails, and some recreational trails. As a result, road disturbances used in this CE Assessment include these additional linear features (i.e., fire guards and some trails).

Disturbances in OGMAs were identified from the CE Human Disturbance Layer (2019) and the CE Integrated Roads Layer (2019). Some source data does not include a disturbance date; therefore, it was not possible to remove disturbances that occurred prior to OGMA establishment. Due to data limitations most disturbances (e.g., roads) do not have dates provided, except for forest harvesting (e.g., cutblocks). Cutblocks that were more than 20 years old or pre-date the legal establishment of the OGMA were removed. This means that the 'cutblocks' incursion category represents forest harvesting that occurred between 1999 and 2019, and any forest harvesting within an OGMA that occurred prior to 1999 or after 2019 is not included in this assessment. As a result, all disturbances were included in this assessment with the exception of historical cutblocks (i.e., 20 years and older). **Consequently, this may skew the assessment results to show incursions that were known and accepted at time of OGMA establishment. At the very least, all OGMA incursions beyond the threshold limits should trigger further inquiry**.

5 ASSESSMENT RESULTS

This section presents the assessment results for each CE Indicator by AU and summarizes the results at multiple scales and combinations of LU, NDT, BEO, and BEC through maps and tables, followed by regional commentary to support further discussion. Many of the tables presented in this section have additional information available in the Appendices. The regional commentary interprets, as best as possible, the meaning of results, supporting numerical data, possible contributing or causal factors, and limitations. The amount and age of old and mature forests is derived from the Provincial B.C. Geographical Warehouse (BCGW) VRI dataset (data extracted in 2019). **The results and discussion are based on the data and information at the time of the assessment (2019). Any activities or disturbances that have occurred since that time are not captured in this assessment**. With the limitations of the assessment, it is possible that the amount of old growth forest for an AU could be overestimated or underestimated.

The results of the current condition reporting for old growth forest are not a determination or judgement of compliance or non-compliance with legal orders or policy. These assessments provide an interpretative reporting of current conditions based on indicators and thresholds as guided by legal orders or policy.

In the Lillooet TSA, there are 159 AUs included in this assessment. A table summarizing the denominator (total area (ha) and total CE-CFLB considered) for each CE indicator is presented in Appendix 2.

5.1 Amount of Old Growth Forest

This non-spatial indicator determines the current amount of old growth forest within each AU in relation to the legal targets for old growth forest. In the Lillooet TSA, the old growth forest targets used to guide the amount of old growth forest required originated from PNOGO. The PNOGO legal targets provide a consistent foundation for current condition reporting of old growth forest as it establishes the minimum percent threshold for old growth forest representation that should be achieved in each AU.

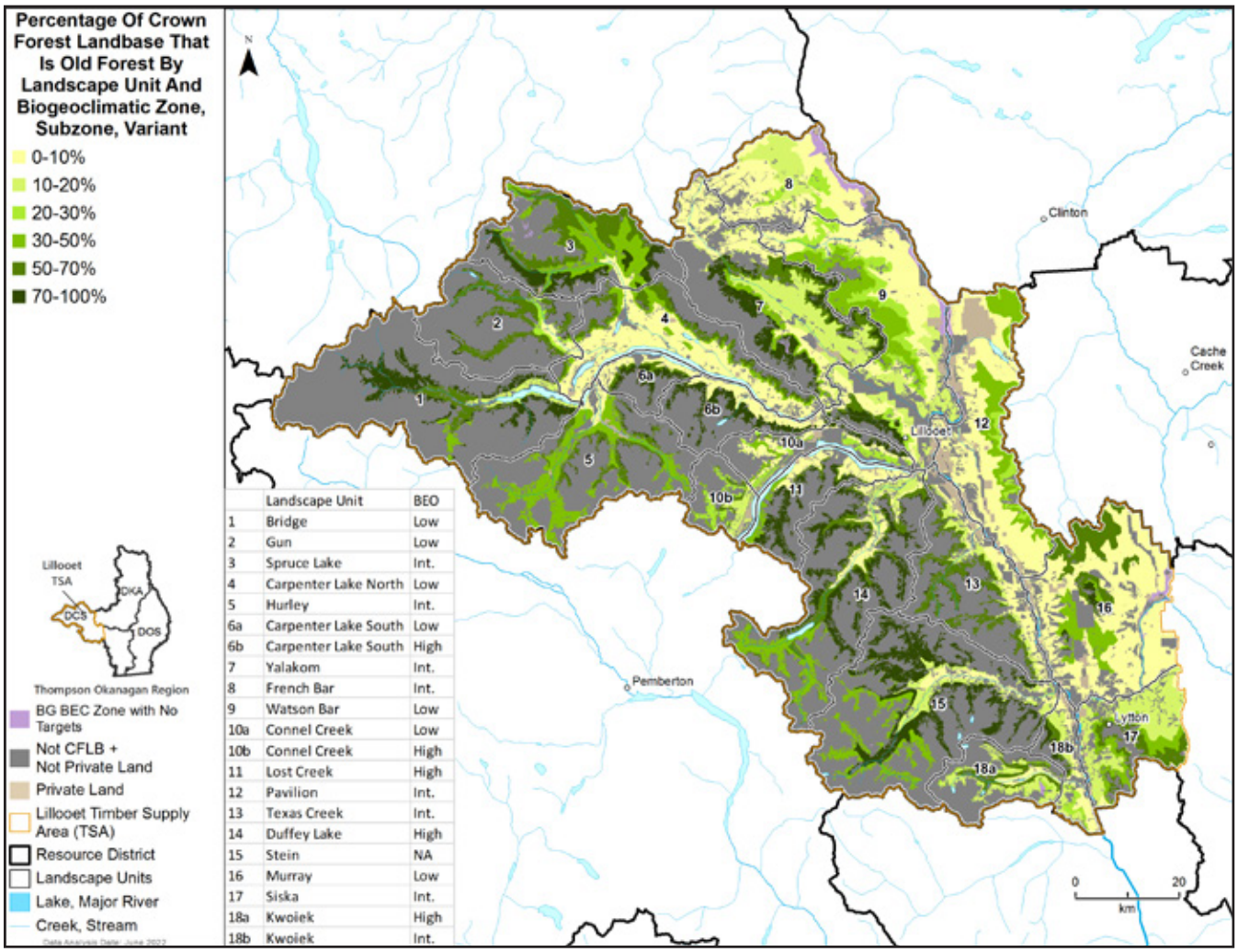
Old growth forest targets are set in PNOGO by LU for each NDT, BEO, and BEC combination with targets defined by forest age. Refer to Table 5 (Section 3.1.1) for the age-based definitions of old growth forest. Appendix 3 (Table 23) provides a complete listing of the old growth legal targets (%) applied to each AU (by LU, BEO, and BEC) and reported by the total amount in the CE-CFLB to determine the current condition. It also provides a summary of the current amount of old growth forest compared to the PNOGO legal targets for all AUs in the Lillooet TSA.

5.1.1 Total Amount of Old Growth Forest in the CE-CFLB

Overall, 31.6% of the total CE-CFLB (174,301.3 ha) is old growth forest. Areas of the CE-CFLB with greater than 50% old growth forest are in the higher elevation forests west of Lillooet and Highway 12, with some pockets in the southeastern portion of the TSA (Figure 6). In the CE-CFLB, the LUs that have several areas with the highest percentages (greater than 70%) of old growth forest exist in the Bridge, Carpenter Lake South, Duffy Lake, and Yalakom LUs. Conversely, there are LUs that have several areas with less than 10% old growth forest remaining in the Murray, Pavilion, Watson Bar, French Bar, and Carpenter Lake North LUs.

Provincial Parks have been included because the presence of old growth forest in these areas contributes to the overall current condition of old growth forest in the CE-CFLB. However, Stein Park is unique because it is an individual LU (Stein LU), and no targets are applied. As a result, the Stein LU is included in reporting the total amount of old growth forest on the CE-CFLB but not included in the old growth and mature-plus-old forest indicator assessments comparing current amount to legal and policy targets.

There is a total of 44,211.2 ha of CE-CFLB with no targets in several locations across the TSA: 36,579.3 ha where no BEO is established (Stein LU), 5,505.2 ha in NDT4 BEC zones with no targets (BGxh2, BGxh3, and BGxw2), and 2,126.7 ha of NDT5 (excluding the Stein LU).



	Landscape Unit	BEO
1	Bridge	Low
2	Gun	Low
3	Spruce Lake	Int.
4	Carpenter Lake North	Low
5	Hurley	Int.
6a	Carpenter Lake South	Low
6b	Carpenter Lake South	High
7	Yalakom	Int.
8	French Bar	Int.
9	Watson Bar	Low
10a	Connel Creek	Low
10b	Connel Creek	High
11	Lost Creek	High
12	Pavilion	Int.
13	Texas Creek	Int.
14	Duffey Lake	High
15	Stein	NA
16	Murray	Low
17	Siska	Int.
18a	Kwoiek	High
18b	Kwoiek	Int.

Figure 6. *Percent of Cumulative Effects Crown Forest Land Base (CE-CFLB) that is Old Growth Forest by Assessment Unit (AU) in the Lillooet Timber Supply Area (TSA).*[10]

[10] Stein LU is included on the map as it contributes to the current condition of old growth forest.

5.1.2 Overview of Assessment Units

This section of the report provides a high-level summary of old growth assessment results compared to legal PNOGO targets by AU (LU-BEO-NDT-BEC) for the Lillooet TSA.

Of the total CE-CFLB area of 551,208.4 ha, targets have been assigned to 506,997.2 ha (Table 9). The total amount of old growth forest in the CE-CFLB is 174,301.3 ha (31.6% of CE-CFLB), of which 26.2%, 28.7% and 43.9% are located within LUs assigned as Low, Intermediate, and High BEO, respectively. There are five LUs assigned as High BEO: Carpenter Lake South, Connel Creek, Duffey Lake, Kwoiek, and Lost Creek. In the CE-CFLB, there are three LUs that have multiple BEOs assigned: Carpenter Lake South, Connel Creek, and Kwoiek.

The BDG policy guidance[11] suggests that 45% of the forest area should be assigned as Low BEO (within a range of 30-55%), 45% as Intermediate BEO (35-60%), and 10% as High BEO (no range provided). In the Lillooet TSA, the proportion of the total CE-CFLB area assigned as Low, Intermediate, and High BEO is approximately 37.1%, 43.7%, and 12.6%, respectively, and the remaining CE-CFLB (6.6%) has no BEO assigned. Currently, the amount of CE-CFLB assigned to High BEO (12.6%) in the Lillooet TSA is more than the recommended BDG target (10%). This equates to 69,399.4 ha assigned to High BEO in the Lillooet TSA, 14,278.6 ha over the recommended target of 55,120.8 ha.

Table 9. *Amount of Old Growth Forest in the Lillooet Timber Supply Area (TSA) Cumulative Effects Crown Forested Land Base (CE-CFLB) by Biodiversity Emphasis Options (BEO).*

	Lillooet TSA	Biodiversity Emphasis Options (BEOs) in the CE-CFLB			
		High BEO	Intermediate BEO	Low BEO	No BEO[a]
# of Landscape Units (LUs)[b]	18	5	8	7	1
Gross TSA Area (ha)[c]	1,125,025.0	184,735.5	424,591.1	407,032.4	108.665.4
Total CE-CFLB Area (ha)	551,208.4	69,399.4	240,959.5	204,270.2	36,579.3
% Area of Total CE-CFLB	100%	12.6%	43.7%	37.1%	6.6%
CE-CFLB Area (ha) with Targets	506,997.2	69,001.0	236,394.5	201,601.7	0.0
Old Growth Forest CE-CFLB Area (ha)	174,301.3	30,471.0	69,264.9	53,492.0	21,072.7
% of Old Growth Forest in CE-CFLB by BEO Designation	31.6%	43.9%	28.7%	26.2%	57.6%

[a] No BEO is established in the Stein LU therefore no old growth forest targets are assigned. This is provided for information and context only.

[b] There are three LUs with multiple BEOs assigned. Therefore, each value in the "# of Landscape Units (LUs)" row is independent of the others in such a way that they do not sum together to equal the total number of LUs shown for the Lillooet TSA.

[c] The gross TSA area is provided for information and context only.

[11] Biodiversity Guidebook (1995, Table 1, page 8) states "Table 1 illustrates the proportion of the area of a subregional planning unit that should fall under higher, intermediate, or low biodiversity emphasis. These percentages apply to the provincial forest within the subregional planning unit." For the purposes of this report, the CE-CFLB area within each LU is assumed as the area of provincial forest within the subregional planning unit.

5.1.3 Current Condition of Old Growth Forest Compared to Legal Targets

The current condition of old growth forest is one of four assessment indicators, and the following results are presented in the colour scheme and categories as a percentage of the legal PNOGO target met (Figure 7), as described in Section 4. In the Lillooet TSA, all LUs except the Stein (17 LUs total) have non-legal OGMAs. The AUs with less than 100% of the target met are considered to be in deficit of old growth forest.

In general, the distribution of old growth forest as compared to the targets shows more old growth forest in the higher elevations and less in the valley bottoms (Figure 7). There is sufficient old growth forest to meet or exceed the targets in 63% of AUs (100 out of 159 AUs). More than half (99 of 159 AUs, or 62.2%) of the AUs have more than 125% of the target amount of old growth forest (see Appendix 3 Table 23). These AUs are located primarily west of the Fraser River, in the Siska LU to the south, and in higher elevations of the Pavilion and Murray LUs to the east. There are currently no AUs with 100-110% of the target amount of old growth forest.

There is insufficient old growth forest to meet targets in 37% of AUs (59 of 159 AU). In the eastern portion of the TSA there are large areas with 30-50% of the targets met (Murray and Watson Bar LUs), and in the northern portion of the TSA, the valley bottoms, and along Carpenter Lake there are large areas with 0-30% of the target met (Spruce Lake, Pavillion, and Carpenter Lake North LUs).

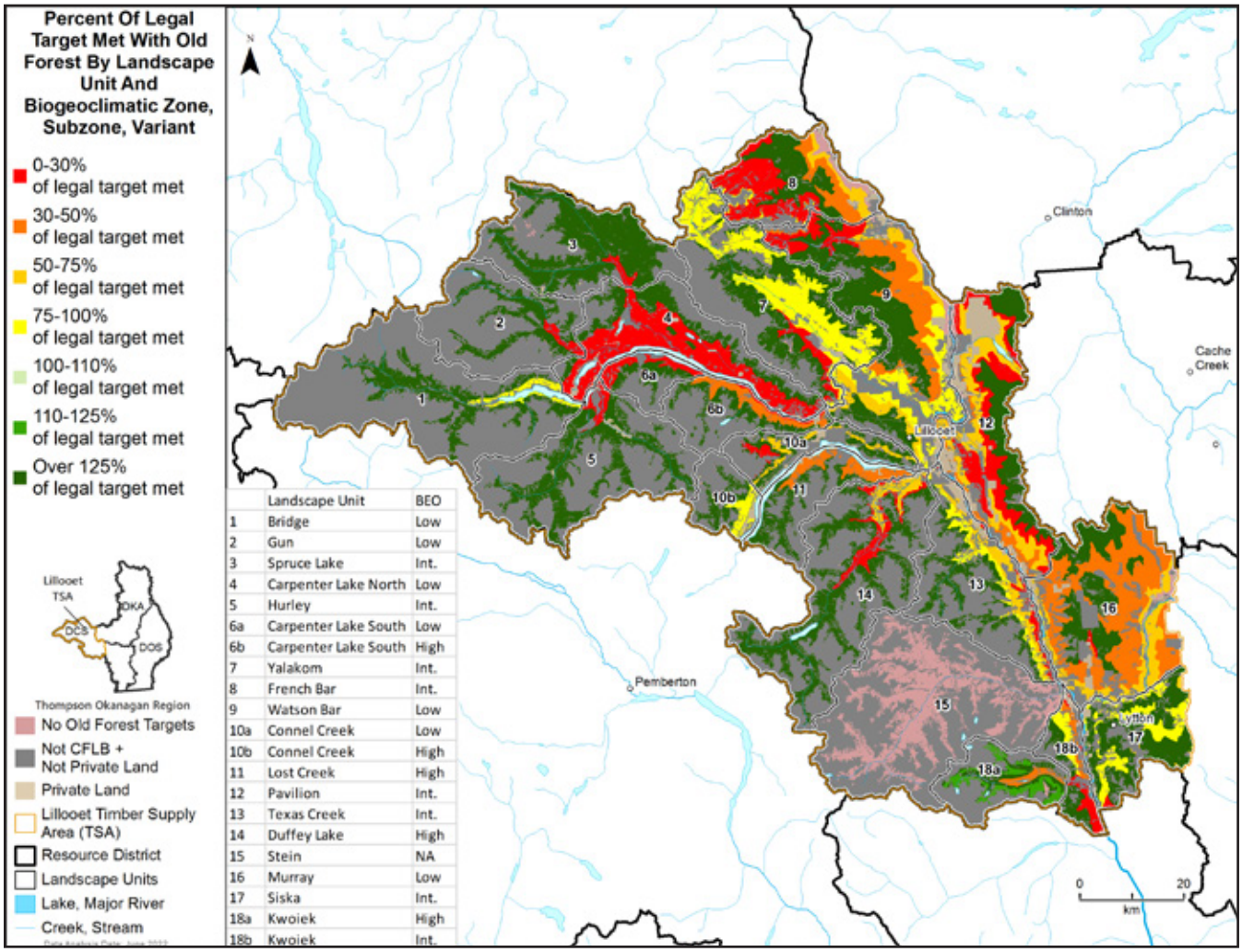


Figure 7. *Current Condition of Old Growth Forest as a Percent of Legal Target Met in the Lillooet Timber Supply Area (TSA).*[12]

[12] Any AUs with less than 100% of the target met are considered to be in deficit of old growth forest.

The 59 AUs with insufficient old growth forest compared to the PNOGO targets cover a total of 236,428.1 ha of CE-CFLB. Of these 59 AUs, seven AUs have less than 500 ha of CE-CFLB in the LU-BEC (Table 10). This low amount of CE-CFLB will influence the ability for these AUs to meet the targets in the indicator reporting. The IDF BEC zone contains the largest CE-CFLB area (82% or 193,902.6 ha of CE-CFLB) of AUs that do not meet the legal PNOGO targets.

There are 25 AUs with 0-30% of the target met that cover 75,663.0 ha of CE-CFLB, the majority of which are in the IDF BEC zone (76% of CE-CFLB). Of this, nine of these AUs (3,831.9 ha of CE-CFLB) have no old growth forest remaining to meet the targets, with the remaining 16 AUs (71,831.2 ha of CE-CFLB) have less than 500 ha of old growth remaining to meet the targets. There are 11 AUs with 30-50% of the target met that cover 68,120.1 ha of CE-CFLB, the majority of which are in the IDF BEC zone (95% of CE-CFLB), mostly in the Murray LU. There are 10 AUs with 50-75% of the target met that cover 40,178.0 ha of CE-CFLB, the majority of which are within the IDF and PP BEC zone (79% and 21% of the CE-CFLB, respectively). Finally, there are 13 AUs with 75-100% of the target met that cover 52,467.0 ha of CE-CFLB, the majority of which are in the IDF BEC zone (76% of CE-CFLB), mostly in the Yalakom LU.

The amount of existing old forest that remains on the CE-CFLB within these 59 AUs is between 0 ha to 1,300 ha (or 0 to 17%). As the PNOGO old growth targets for these AUs range from 9% to 19%, many of the AUs are at risk of not meeting targets and potentially compromising old growth biodiversity values.

Of the 100 AUs that have greater than 100% of the target met (Appendix 3, Table 23), 48 of these AUs have more than 400% of the target old growth forest amount. Of the AUs meeting the targets, 23 AUs have less than 500 ha of CE-CFLB. There are four AUs with more than 10,000 ha of CE-CFLB that occur in two BEC variants across three LUs: the Pavilion (MSxk3), Spruce Lake (ESSFxc3) and Watson Bar (ESSFxc3 and MSxk3) LUs. The amount of existing old forest in these AUs is 33%, 56%, 43%, and 29%, respectively.

Table 10. *Assessment Units (AUs) with 0-125% of Old Growth Forest Compared to Legal Targets in the Lillooet Timber Supply Area (TSA).*

Column Calculations				A	B	C = B/A	D	E = C/D
Indicator Condition	Assessment Unit (AU)			LU-BEC Area in CE-CFLB (ha)	Existing Old Forest Area in AU (ha)	Existing Old Forest in AU (%)	Legal Old Forest Target (%)	% of Legal Target Met in AU
	BEC	LU	BEO					
0 – 30%	**IDFdk3**	Pavilion	Int.	2,403.1	0.0	0%	13%	0.0%
	IDFww1	Murray	Low	348.6	0.0	0%	13%	0.0%
	IDFww1	Siska	Int.	360.1	0.0	0%	13%	0.0%
	IDFxc	Bridge	Low	0.3	0.0	0%	13%	0.0%
	IDFxc	Hurley	Int.	8.4	0.0	0%	13%	0.0%
	IDFxc	Siska	Int.	6.0	0.0	0%	13%	0.0%
	IDFxw	Pavilion	Int.	510.5	0.0	0%	13%	0.0%
	PPxh2	Kwoiek	Int.	175.5	0.0	0%	13%	0.0%
	ESSFmw1	Siska	Int.	19.1	0.0	0%	9%	0.0%
	IDFdc	Carpenter Lake South	Low	2,702.7	4.2	0%	13%	1.2%
	IDFdc	Carpenter Lake North	Low	19,032.8	307.5	2%	13%	12.4%
	IDFdk3	Watson Bar	Low	2,321.1	38.3	2%	13%	12.7%
	ESSFmw2	Connel Creek	Low	895.6	11.2	1%	9%	13.8%
	IDFxc	Carpenter Lake North	Low	4,419.5	98.6	2%	13%	17.2%
	ESSFxv2	French Bar	Int.	12,380.4	197.8	2%	9%	17.8%
	IDFdc	Spruce Lake	Int.	1,086.3	27.0	2%	13%	19.1%
	IDFdc	Gun	Low	1,358.3	35.2	3%	13%	19.9%
	ESSFxv2	Watson Bar	Low	3,061.8	57.6	2%	9%	20.9%
	IDFdc	Hurley	Int.	1,528.7	42.6	3%	13%	21.4%
	IDFww1	Kwoiek	Int.	1,915.9	54.7	3%	13%	22.0%
	IDFdk1	Pavilion	Int.	12,317.3	362.6	3%	13%	22.6%
	IDFxc	Carpenter Lake South	High	577.4	27.2	5%	19%	24.8%
	PPxh2	Texas Creek	Int.	1,379.5	49.1	4%	13%	27.4%
	IDFdc	Duffey Lake	High	4,172.9	227.1	5%	19%	28.6%
	IDFdc	Yalakom	Int.	2,681.1	100.2	4%	13%	28.8%
30 – 50%	**ESSFxvw**	Watson Bar	Low	443.3	14.2	3%	9%	35.7%
	IDFdk1	Murray	Low	19,072.7	950.3	5%	13%	38.3%
	PPxh2	Pavilion	Int.	3,171.2	163.3	5%	13%	39.6%
	IDFww1	Kwoiek	High	1,441.1	108.7	8%	19%	39.7%
	IDFxh2	Murray	Low	15,099.3	813.0	5%	13%	41.4%
	IDFdc	Carpenter Lake South	High	3,952.0	318.5	8%	19%	42.4%
	IDFdk3	French Bar	Int.	5,212.4	288.2	6%	13%	42.5%
	IDFxc	Lost Creek	High	2,592.5	212.8	8%	19%	43.2%
	IDFxc	Kwoiek	Int.	1,200.8	69.9	6%	13%	44.8%
	IDFdc	Lost Creek	High	2,063.6	177.2	9%	19%	45.2%
	IDFdk1	Watson Bar	Low	13,871.1	880.8	6%	13%	48.8%

Column Calculations				A	B	C = B/A	D	E = C/D
Indicator Condition	Assessment Unit (AU)			LU-BEC Area in CE-CFLB (ha)	Existing Old Forest Area in AU (ha)	Existing Old Forest in AU (%)	Legal Old Forest Target (%)	% of Legal Target Met in AU
	BEC	LU	BEO					
50 – 75%	**IDFxh2**	Pavilion	Int.	12,216.1	849.0	7%	13%	53.5%
	ESSFdcw	Siska	Int.	204.4	10.0	5%	9%	54.2%
	IDFxw	French Bar	Int.	2,715.7	196.6	7%	13%	55.7%
	IDFxc	Duffey Lake	High	2,567.1	287.7	11%	19%	59.0%
	IDFxc	Texas Creek	Int.	4,566.9	362.0	8%	13%	61.0%
	IDFdc	Connel Creek	Low	2,324.1	195.9	8%	13%	64.8%
	IDFdc	Watson Bar	Low	3,843.7	330.8	9%	13%	66.2%
	PPxh2	Murray	Low	8,403.3	751.6	9%	13%	68.8%
	IDFxw	Watson Bar	Low	3,098.1	287.9	9%	13%	71.5%
	IDFdk1	Siska	Int.	238.5	22.3	9%	13%	72.0%
75 – 100%	**ESSFxvw**	French Bar	Int.	823.1	55.8	7%	9%	75.4%
	PPxh2	Watson Bar	Low	1,325.6	140.3	11%	13%	81.4%
	IDFxc	Watson Bar	Low	8,377.6	901.0	11%	13%	82.7%
	ESSFxv2	Yalakom	Int.	9,078.8	684.9	8%	9%	83.8%
	PPxh2	Siska	Int.	1,163.9	131.5	11%	13%	86.9%
	IDFdk2	Siska	Int.	6,417.5	734.9	11%	13%	88.1%
	IDFdc	Connel Creek	High	800.6	135.2	17%	19%	88.9%
	IDFdk1	Yalakom	Int.	11,285.7	1,306.2	12%	13%	89.0%
	IDFdc	Texas Creek	Int.	3,967.5	459.7	12%	13%	89.1%
	IDFxc	Yalakom	Int.	3,625.9	422.8	12%	13%	89.7%
	IDFdc	Bridge	Low	2,450.8	289.9	12%	13%	91.0%
	IDFww1	Connel Creek	High	1,209.0	209.9	17%	19%	91.4%
	IDFdc	Kwoiek	Int.	1,941.0	235.7	12%	13%	93.4%
110 – 125%	**ESSFmw2**	Kwoiek	High	4,585.4	714.4	16%	13%	119.9%

Of the CE-CFLB with targets (506,997.2 ha), 53.4% (270,569.1 ha) is meeting or exceeding old growth forest targets, the majority of which (52.5% or 265,984.7 ha of the CE-CFLB) has greater than 125% old growth forest compared to the targets (Figure 8). Of the CE-CFLB that does not have enough old growth forest as compared to the targets, 10.3% (52,467.0 ha of CE-CFLB) falls within the 75-100% target met category, 7.9% (40,178.0 ha) within the 50-75% category, 13.4% (68,120.1 ha) within the 30-50% category, and 14.9% (75,663.0 ha) within the 0-30% category. There are currently no AUs with 100-110% of the target amount of old growth forest, and 44,211.2 ha of CE-CFLB has no targets assigned.

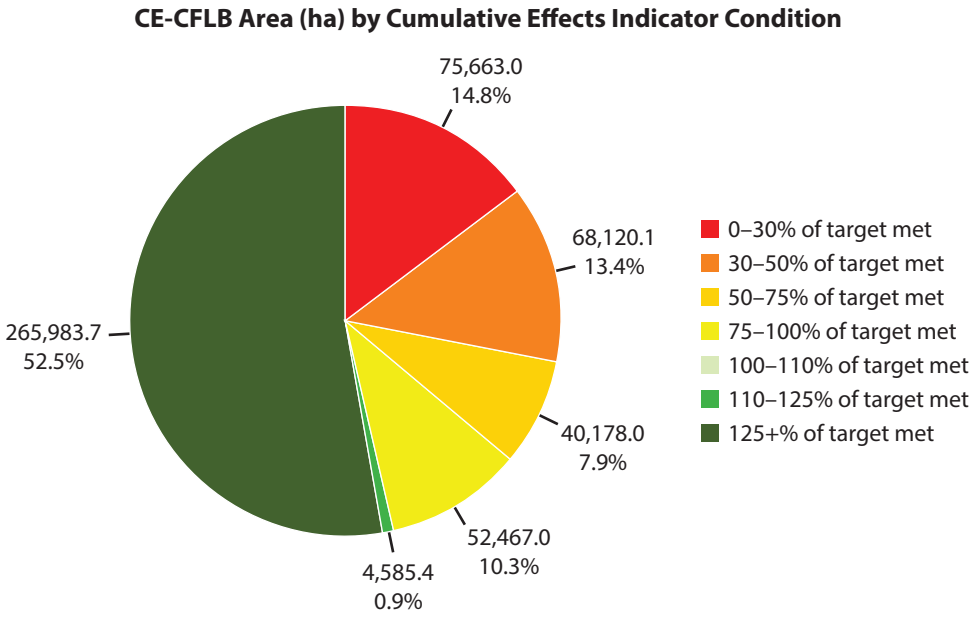


Figure 8. *Amount of Cumulative Effects Crown Forested Land Base (CE-CFLB) in each Cumulative Effects Indicator Condition as a Percentage of Old Growth Forest Legal Targets Met in the Lillooet Timber Supply Area (TSA).*

5.1.3.1 Landscape Unit and Old Growth Forest Distribution Compared to Legal Targets

This section provides an overview of the assessment results summarized by LU. Table 11 shows the status of old growth forest as compared to the non-spatial PNOGO legal targets for all LUs. Overall, 63% of the AUs are meeting the old growth forest target. There are no LUs in their entirety that have sufficient amounts of old growth forest compared to the PNOGO targets; Spruce Lake LU is the closest with 83% of its AUs meeting the old growth forest targets. There are four LUs that contain less than half of the AUs meeting old growth targets: French Bar (33%), Siska (36%), Pavilion (38%), and Watson Bar (43%) LUs.

Table 11. *Summary of Assessment Units (AU) by Landscape Unit (LU) that are Meeting Legal Targets in the Lillooet Timber Supply Area (TSA).*

Assessment Unit (AU)		Total # of Assessment Units (AUs)	# of AUs Meeting Old Growth Forest Targets	% of AUs Meeting Old Growth Forest Targets[a]
Landscape Unit	**BEO**			
Bridge	Low	9	7	78%
Carpenter Lake North	Low	5	3	60%
Carpenter Lake South	High / Low	11	8	73%
Connel Creek	High / Low	17	13	76%
Duffey Lake	High	9	7	78%
French Bar	Int.	6	2	33%
Gun	Low	4	3	75%
Hurley	Int.	8	6	75%
Kwoiek	High / Int.	17	12	71%
Lost Creek	High	7	5	71%
Murray	Low	9	5	56%
Pavilion	Int.	8	3	38%
Siska	Int.	11	4	36%
Spruce Lake	Int.	6	5	83%
Texas Creek	Int.	6	3	50%
Watson Bar	Low	14	6	43%
Yalakom	Int.	12	8	67%
Total	**17 LUs**	**159**	**100**	**63%**

[a] AUs with less than 100% of the legal target are considered to be in deficit of old growth forest.

5.1.3.2 Biodiversity Emphasis Option and Old Growth Forest Distribution Compared to Legal Targets

This section provides an overview of the assessment results summarized by the BEO assigned to LUs. The BEO may influence whether there is sufficient old growth forest available to contribute to the established target. The CE assessment for old growth forest uses the full targets for Low BEO units and does not apply the 2/3 drawdown as allowed under PNOGO.

The Intermediate and Low BEOs have the most CE-CFLB area, however only 55% and 64% of AUs, respectively, have sufficient old growth forest compared to the targets (Table 12). Currently 63% of AUs are meeting the PNOGO targets, which equates to 53.3% of the CE-CFLB (270,569.1 ha) within AUs meeting targets.

Table 12. *Summary of Assessment Units (AU) by Biodiversity Emphasis Option (BEO) that are Meeting Legal Targets in the Lillooet Timber Supply Area (TSA).*

	Biodiversity Emphasis Options (BEOs) in the CE-CFLB			
	High BEO	Intermediate BEO	Low BEO	Total
# of Assessment Units (AUs)	36	67	56	159
# AUs Meeting Targets	27	37	36	100
% AUs Meeting Targets	75%	55%	64%	63%
CE-CFLB Area (ha) in AUs with Targets	69,001.0	236,394.5	201,601.7	506,997.2
CE-CFLB Area (ha) in AUs Meeting Targets	49,624.7	131,793.2	89,151.2	270,569.1

5.1.3.3 Biogeoclimatic Ecosystem Classification and Old Growth Forest Distribution Compared to Legal Targets

This section provides an overview of the assessment results summarized by BEC. In general, the amount of old growth forest is at or exceeding targets in high elevation forests (ESSF and MS BEC zones) and furthest from the targets in low elevation valley bottoms (IDF and PP BEC zones).

In the CE-CFLB, of the total 29 BEC subzone/variants, there are 15 BEC subzone/variants that have 100% of AUs with sufficient amounts of old growth forest to meet PNOGO targets (236,808.6 ha of CE-CFLB) (Table 13). Within these AUs there is 118,015.4 ha of CE-CFLB in the ESSF (dc2, dv1, dv2, dvw, mww, xc2, xc3, and xc2 variants), and 117,569.7 ha in the MS (dc1, dc3, dm2, mw2, xk3, and xv variants), with a small amount (1,223.4 ha) in the CWHms1.

There are eight BEC subzone/variants that have 0% of AUs with sufficient amounts of old growth forest to meet PNOGO targets. These AUs are primarily in the IDF BEC zone (133,369.9 ha of CE-CFLB in the dc, dk1, dk2, dk3, and xw variants), with some CE-CFLB in the ESSF (24,744.2 ha in dcw, mc1, and xv2 variants). There are 45 AUs associated with the IDF (all subzones with a total CE-CFLB of 193,902.6 ha) that are not meeting the targets.

Table 13. *Summary of Assessment Units (AU) by Biogeoclimatic Ecosystem Classification (BEC) Subzone or Variant that are Meeting Legal Targets in the Lillooet Timber Supply Area (TSA).*

BEC Variant[a]	Total Area in BEC (ha)	Total CE-CFLB Area (ha) in BEC with Targets	Existing Old Forest in CE-CFLB Area (ha)	Existing Old Forest in CE-CFLB (%)	# of Assessment Units (AUs) in BEC	# of AUs Meeting Target	% of AU Meeting Targets
CWHms1	1,360.1	1,223.4	394.3	32%	1	1	100%
ESSFdc2	8,825.8	6,117.2	3,634.1	59%	2	2	100%
ESSFdcw	936.5	204.4	10.0	5%	1	0	0%
ESSFdv1	54,859.5	32,711.2	23,738.5	73%	10	10	100%
ESSFdv2	44,771.8	31,994.8	22,291.9	70%	8	8	100%
ESSFdvw	60,899.5	8,162.4	6,832.5	84%	16	16	100%
ESSFmw1	198.4	19.1	0.0	0%	1	0	0%
ESSFmw2	32,874.9	22,349.4	7,519.2	34%	7	6	86%
ESSFmww	18,472.4	3,021.1	1,028.5	34%	6	6	100%
ESSFxc2	1,333.7	1,291.8	752.1	58%	1	1	100%
ESSFxc3	36,205.1	32,003.0	16,377.2	51%	4	4	100%
ESSFxcw	6,993.7	2,714.0	1,246.6	46%	5	5	100%
ESSFxv2	28,977.9	24,521.0	940.3	4%	3	0	0%
ESSFxvw	7,611.3	2,672.0	283.4	11%	3	1	33%
IDFdc	70,501.8	53,906.0	2,886.7	5%	15	0	0%
IDFdk1	62,984.3	56,785.4	3,522.3	6%	5	0	0%
IDFdk2	7,552.2	6,417.5	734.9	11%	1	0	0%
IDFdk3	10,860.0	9,936.7	326.4	3%	3	0	0%
IDFww1	15,792.2	7,782.3	1,060.2	14%	7	2	29%
IDFxc	53,999.1	29,387.7	2,694.0	9%	12	1	8%
IDFxh2	50,485.2	34,130.9	2,958.6	9%	3	1	33%
IDFxw	7,622.2	6,324.3	484.5	8%	3	0	0%
MSdc1	29,385.3	22,351.3	12,552.8	56%	10	10	100%
MSdc3	23,964.9	20,657.8	9,700.5	47%	8	8	100%
MSdm2	14,254.7	11,474.5	4,665.5	41%	2	2	100%
MSmw2	17,314.6	13,317.7	7,093.6	53%	8	8	100%
MSxk3	45,197.0	42,204.2	16,817.0	40%	6	6	100%
MSxv	7,842.7	7,564.2	1,397.2	18%	1	1	100%
PPxh2	37,323.0	15,751.9	1,285.8	8%	7	1	14%
TOTAL	**759,399**	**506,997**	**153,229**	**30%**	**159**	**100**	**63%**

[a] This table demonstrates the distribution of old growth forest across BECs. Only BECs with old growth forest targets are listed in this table.

5.1.4 Limitations

This assessment does not evaluate and address whether targets themselves are sufficient and effective at maintaining biodiversity given the ecological function and complexity of old growth forests. Numerical targets applied to BEC subzones/variants cannot assess the ecological factors (e.g., stand productivity, representation, old growth forest attributes) at the site series and stand level. The age-based definitions of old growth forest are a proxy that assumes the biodiversity and ecological characteristics of old growth stands (e.g., structure, function, composition) will be present.

In addition, the VRI may underestimate the age of old growth forest based on the methodology used for photo interpretation and data updates, misidentifying these stands as mature forest. For example, the IDF/dry-belt fir ecosystems with a long history of partial cutting may not be accurately reflected in the VRI due to the variable retention left influencing how that stand is interpreted and attributed. Another potential situation where this occurs is in high elevation forests with lower productivity; these site conditions can create old growth forests that are shorter in tree height than what would be expected on higher productivity sites. When the VRI is photo-interpreted, these stands can be misclassified as younger due to this perceived stunted growth. As a result, old growth forest may be under-represented in the VRI, which may have influenced the results of this assessment. Lastly, as the reporting of old growth forest relies on the projected age of VRI polygons, there is a possibility that the amount of old growth that is greater than 250 years is under-estimated, as the projected age is not reflective of the true age of the stand due to inventory methods and age projections based on the average age of a stand.

The PNOGO included provisions that allow the use of younger forests to meet old growth forest targets "where equal or better conservation benefits would result" and to recruit from younger stands when there is insufficient old growth forest in a BEC variant. These provisions may have been applied in the AUs that do not have enough old growth forest to meet the targets. Further investigation (outside the scope of this assessment) would be required to examine whether these provisions have been applied appropriately.

5.1.5 Summary and Observations

Old growth forest covers 31.6% of the CE-CFLB (174,301.3 ha), generally located in higher elevations in the west and south portions of the TSA. Of the 159 AUs in the Lillooet TSA, 63% (100 AUs) have sufficient old growth forest compared to the targets, which accounts for 53.4% (270,569.1 ha) of the CE-CFLB area that has targets applied. Of the total 29 BEC subzones/variants, there are 15 BEC subzone/variants where all AUs have sufficient old growth forest compared to the targets, covering 236,808.6 ha of CE-CFLB. These AUs are mostly in the ESSF (59 out of 67 AUs, 118,015.4 ha of CE-CFLB) and MS (35 AUs, 117,569.7 ha of CE-CFLB) BEC zones, with one AU in the CWHms1 (1,223.4 ha of CE-CFLB).

The remaining 59 AUs that are not meeting the old growth forest targets cover 236,428.1 ha of CE-CFLB. By indicator condition, 25 AUs (75,663.0 ha of CE-CFLB) have 0-30% of the target met, 11 AUs (68,120.1 ha of CE-CFLB) have 30-50% of the target met, 10 AUs (40,178.0 ha of CE-CFLB) have 50-75% of the target met, and 13 AUs (52,467.0 ha of CE-CFLB) have 75-100% of the target met. There are nine AUs (3,831.9 ha of CE-CFLB) that have no old growth forest remaining to meet the targets, mostly in the Pavilion LU. No LU had all AUs meeting the targets.

The AUs with insufficient old growth forest occur across the TSA in all LUs but are especially common in the dry, low elevation valley bottoms (IDF and PP BEC zones). The IDF (all subzones) has 193,902.6 ha of CE-CFLB across 45 AUs that is currently not meeting the targets. More than half (61%) of the CE-CFLB associated with these AUs have less than 50% of the old growth forest targets met. The amount of existing old growth forest that remains on the CE-CFLB within these 59 AUs is between 0 ha to 1,300 ha (or 0 to 17%). As the PNOGO legal targets for these AUs range from 9 to 19%, many are potentially at risk of not meeting targets and compromising old growth biodiversity values.

The current condition of old growth forest is the collective result of current and historic anthropogenic and natural disturbances. There is a long history of wildfires and natural disturbances in the TSA, including pest and insect damage, that has impacted and resulted in large areas without old growth forest stands. Forest harvesting has occurred in all LUs, including salvage harvest in response to natural disturbances. In general, the steep terrain makes the Lillooet TSA have limited THLB compared to other TSAs and is concentrated in the lower elevations. This has resulted in large areas that are inoperable for forestry and likely other types of development and may be influencing why those AUs in lower elevations have less old growth forest. Areas with easier access to timber (i.e., low elevations, moderate terrain, closer to population centers) are often further away from meeting the targets.

Under the *Forest and Range Practices Act* (FRPA) results-based regime, compliance with old growth forest orders is largely dependent on professional reliance. The varying interpretation of orders and policy, as well as approaches to analyzing and tracking old growth forest management by licensees and the Province, presents challenges to accurately track and monitor old growth forest conditions relative to orders over time.

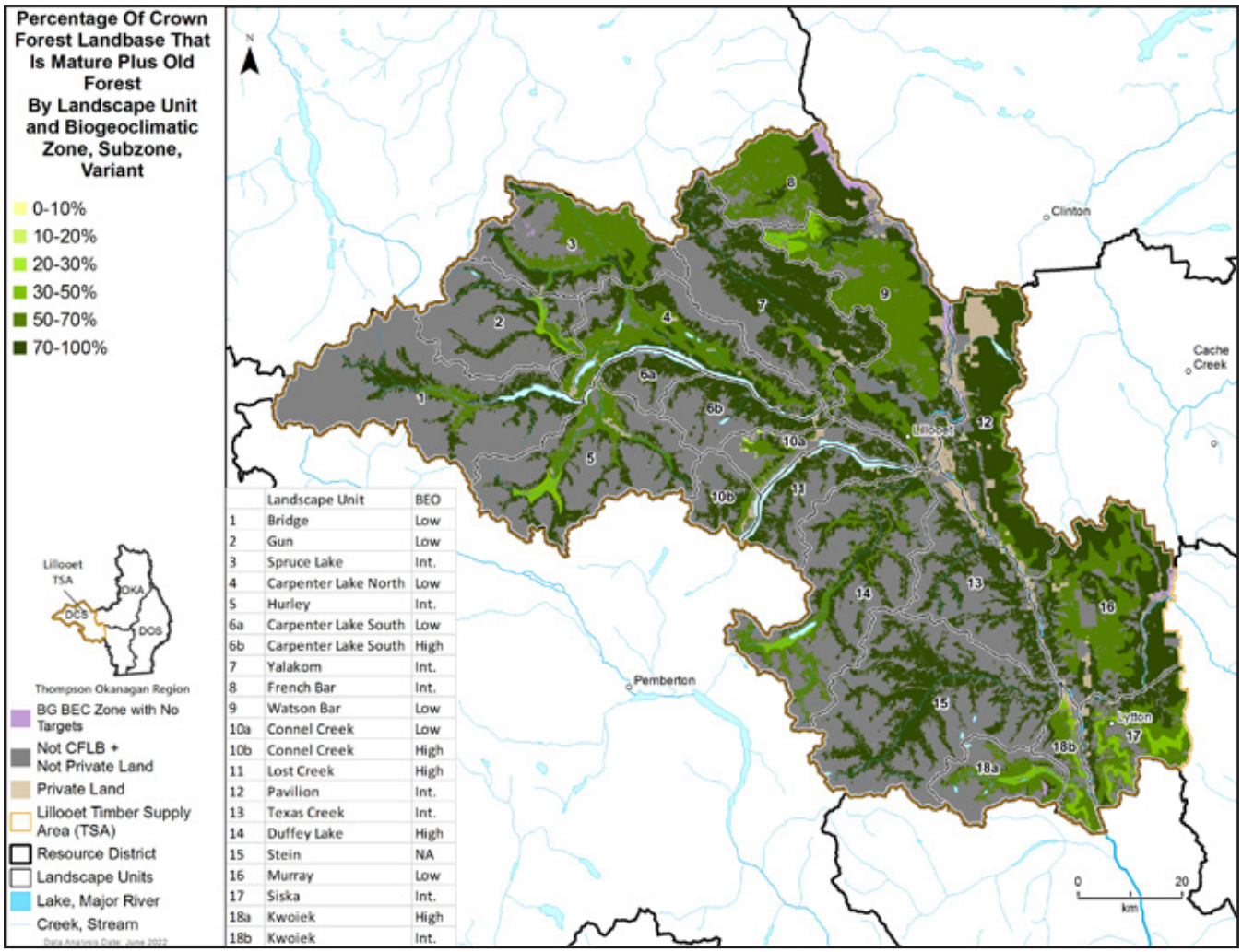
5.2 Amount of Mature-Plus-Old Forest

This non-spatial indicator determines the current amount of mature-plus-old forest within each AU in relation to the policy targets for mature-plus-old forest. As mature forest will become old growth forest over time, knowing the current condition of mature forest is important to determine where forest is available to recruit towards old growth forest targets, particularly where old growth forest is currently underrepresented.

For the Lillooet TSA, the BDG specifies the policies targets (i.e., not legal) to support this CE assessment. Refer to Table 6 (section 3.2.1) for the age-based definitions of mature-plus-old forest. Appendix 3 (Table 24) provides a complete listing of the mature-plus-old forest policy targets (%) applied to each AU (by LU, BEO and BEC) and reported by the total amount in the CE-CFLB to determine the current condition.

5.2.1 Total Amount of Mature-Plus-Old Forest in the CE-CFLB

In contrast to the old growth forest indicator, there are high proportions of mature-plus-old forest distributed across the TSA (Figure 9). Areas with less than 50% mature-plus-old forest are primarily concentrated in the south (Siska and Kwoiek LUs), the western extent of the Duffey Lake LU, and pockets in the French Bar, Gun, and Hurley LUs.



	Landscape Unit	BEO
1	Bridge	Low
2	Gun	Low
3	Spruce Lake	Int.
4	Carpenter Lake North	Low
5	Hurley	Int.
6a	Carpenter Lake South	Low
6b	Carpenter Lake South	High
7	Yalakom	Int.
8	French Bar	Int.
9	Watson Bar	Low
10a	Connel Creek	Low
10b	Connel Creek	High
11	Lost Creek	High
12	Pavilion	Int.
13	Texas Creek	Int.
14	Duffey Lake	High
15	Stein	NA
16	Murray	Low
17	Siska	Int.
18a	Kwoiek	High
18b	Kwoiek	Int.

Figure 9. *Percent of Cumulative Effects Crown Forested Land Base (CE-CFLB) that is Mature-plus-Old Forest by Assessment Unit (AU) in the Lillooet Timber Supply Area (TSA).*[13]

[13] Stein LU is included on the map as it contributes to the current condition of mature-plus-old growth forest.

5.2.2 Overview of Assessment Units

Of the total CE-CFLB area with targets assigned (506,997.2 ha), the total amount of mature-plus-old forest is 395,489.7 ha (71.7% of the CE-CFLB) (Table 14). In contrast, 174,301.3 ha (31.6% of the CE-CFLB) is comprised of old growth forest. The largest differences between the amounts of old growth forest and mature-plus-old forest occurs in the Intermediate and Low BEOs, which have 28.7% and 26.2% old growth forest and 69.3% and 68.8% mature-plus-old forest in the CE-CFLB, respectively.

Table 14. *Amount of Mature-plus-Old Forest in the Cumulative Effects Crown Forested Land Base (CE-CFLB) by Biodiversity Emphasis Options (BEO) in the Lillooet Timber Supply Area (TSA).*

		Biodiversity Emphasis Option (BEO) designations in the CE-CFLB			
	Lillooet	High BEO	Intermediate BEO	Low BEO	No BEO[a]
# of Landscape Units (LUs)[b]	18	5	8	7	1
Gross TSA Area (ha)[c]	1,125,025.0	184,735.5	424,591.1	407,032.4	108,665.4
Total CE-CFLB Area (ha)	551,208.4	69,399.4	240,959.5	204,270.2	36,579.3
CE-CFLB Area (ha) with Targets	506,997.2	69,001.0	236,394.5	201,601.7	0.0
Old Growth Forest CE-CFLB Area (ha)	174,301.3	30,471.6	69,264.9	53,492.0	21,072.7
% of Old Growth Forest in CE-CFLB	31.6%	43.9%	28.7%	26.2%	57.6%
Mature-plus-Old Forest CE-CFLB Area (ha)	395,489.7	53,547.7	166,937.0	140,561.8	34,443.2
% of Mature-plus-Old in CE-CFLB	71.7%	77.2%	69.3%	68.8%	94.2%

[a] No BEO is established in the Stein LU therefore no policy targets are assigned. This is provided for context only.

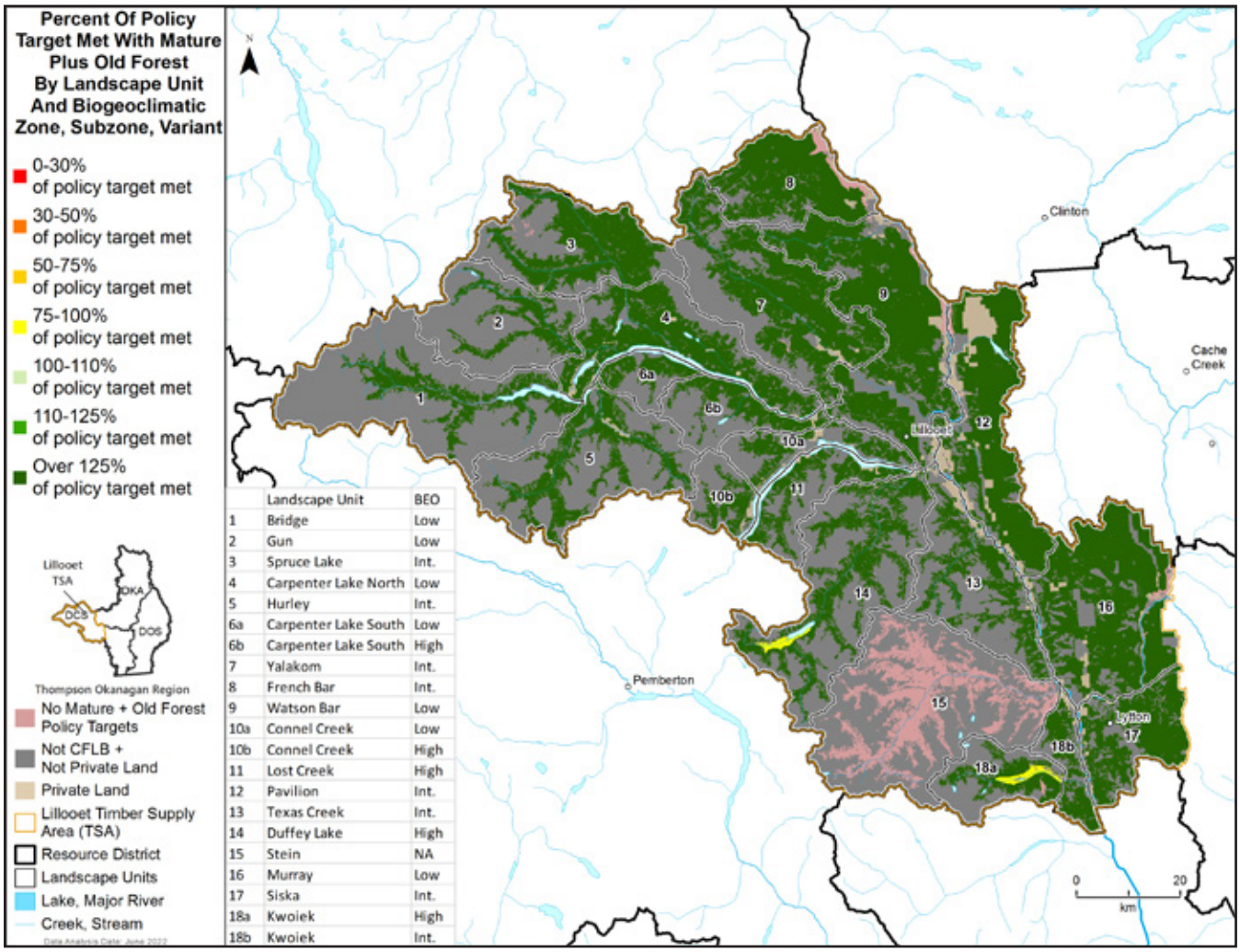
[b] There are three LUs with multiple BEOs assigned. Therefore, each value in the "# of Landscape Units (LUs)" row is independent of the others in such a way that they do not sum together to equal the total number shown for the Lillooet TSA.

[c] The gross TSA area is provided for information and context only.

5.2.3 Current Condition of Mature-Plus-Old Forest Relative to the Policy Targets

The current condition of mature-plus-old growth forest is one of four assessment indicators, and the following results are presented in the colour scheme and categories as a percentage of the BDG policy target met (Figure 10), as described in section 4. In the Lillooet TSA, all LUs except the Stein (17 LUs total) have non-legal OGMAs. The AUs with less than 100% of the policy target met are considered to be in deficit of mature-plus-old growth forest.

In general, AUs are meeting the mature-plus-old forest policy targets across the CE-CFLB (Figure 10, Table 15). Except for small pockets in the Duffey Lake and Kwoiek LUs, the entire TSA has more than 125% mature-plus-old forest compared to the policy targets (see Appendix 3 Table 24). The Stein LU shows no data because it has no BEO assigned (entirely within a Provincial Park) and therefore no policy targets are defined.



	Landscape Unit	BEO
1	Bridge	Low
2	Gun	Low
3	Spruce Lake	Int.
4	Carpenter Lake North	Low
5	Hurley	Int.
6a	Carpenter Lake South	Low
6b	Carpenter Lake South	High
7	Yalakom	Int.
8	French Bar	Int.
9	Watson Bar	Low
10a	Connel Creek	Low
10b	Connel Creek	High
11	Lost Creek	High
12	Pavilion	Int.
13	Texas Creek	Int.
14	Duffey Lake	High
15	Stein	NA
16	Murray	Low
17	Siska	Int.
18a	Kwoiek	High
18b	Kwoiek	Int.

Figure 10. *Current Condition of Mature-plus-Old Forest as a Percent of Policy Target Met in the Lillooet Timber Supply Area (TSA).*[14]

[14] Any AUs with less than 100% of the target met are considered to be in deficit of mature-plus-old forest.

There are two AUs (2,664.6 ha of CE-CFLB) with insufficient mature-plus-old forest to meet policy targets (Table 15). Both AUs are close to meeting targets (75-100% of the target met) and in High BEO units. These two AUs represent a small portion of the total CE-CFLB (0.5%). The Duffey Lake-CWHms1 AU has 91.8% of the old growth forest target met, while the Kwoiek-IDFww1 AU has 85.2% of the target met. The remaining 157 AUs have greater than 125% of the target met (Appendix 3 Table 24); on average AUs have more than 334% of the target mature-plus-old forest amount.

Table 15. *Assessment Units (AUs) with 0-125% of Mature-plus-Old Forest Compared to Policy Targets in the Lillooet Timber Supply Area (TSA).*

Column Calculations				A	B	C = B/A	D	E = C/D
Indicator	Assessment Unit (AU)			LU/BEC Area in CE-CFLB (ha)	Existing Mature-plus-Old Forest Area in AU (ha)	Existing Mature-plus-Old Forest in AU (%)	PNOGO Mature-plus-Old Forest Policy Target (%)	% of PNOGO Target Met in AU
	BEC	Landscape Unit	BEO					
75 - 100%	CWHms1	Duffey Lake	High	1,223.4	572.8	47%	51%	91.8%
	IDFww1	Kwoiek	High	1,441.1	625.9	43%	51%	85.2%

The majority (99%) of the AUs have sufficient mature-plus-old forest compared to the policy targets (Figure 11). Of the CE-CFLB with targets, 99.5% (504,332.6 ha) exceeded the policy targets with more than 125% of the target met. The remaining 2,664.6 ha (0.5%) of CE-CFLB has 75-100% of the target met. There are no AUs in the 0-30%, 30-50%, 50-75%, and 100-110% of target met categories for the mature-plus-old forest indicator.

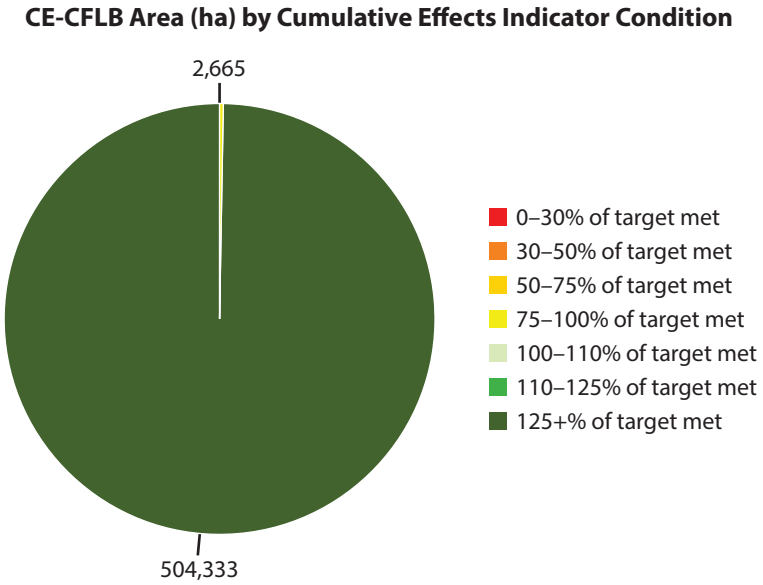


Figure 11. *Amount of Cumulative Effects Crown Forested Land Base (CE-CFLB) in each Cumulative Effects Indicator Condition as a Percentage of Mature-Plus-Old Forest Policy Targets Met in the Lillooet Timber Supply Area (TSA).*

5.2.3.1 Landscape Units and Mature-Plus-Old Forest Distribution Compared to Policy Targets

This section provides an overview of the assessment results summarized by LU. Of the 17 LUs with policy targets assigned, two LUs (Duffey Lake and Kwoiek) each have one AU with insufficient mature-plus-old forest compared to targets (Table 16). Both LUs are in the southern portion of the TSA and reporting 75-100% of the target met. This is an improvement from the old-growth forest indicator where no LU had all AUs meeting the legal targets. This means that 15 LUs have insufficient old forest to meet the legal targets but have sufficient mature-plus-old forest targets to meet the policy targets.

Table 16. *Summary of Assessment Units (AU) by Landscape Unit (LU) that are Meeting Policy Targets in the Lillooet Timber Supply Area (TSA).*

Landscape Unit (LU)	BEO	Total # of Assessment Units (AUs)	# of AUs Meeting Mature-plus-Old Forest Targets	% of AUs Meeting Mature-plus-Old Forest Targets[a]
Bridge	Low	9	9	100%
Carpenter Lake North	Low	5	5	100%
Carpenter Lake South	High / Low	11	11	100%
Connel Creek	High / Low	17	17	100%
Duffey Lake	High	9	8	89%
French Bar	Int.	6	6	100%
Gun	Low	4	4	100%
Hurley	Int.	8	8	100%
Kwoiek	High / Int.	17	16	94%
Lost Creek	High	7	7	100%
Murray	Low	9	9	100%
Pavilion	Int.	8	8	100%
Siska	Int.	11	11	100%
Spruce Lake	Int.	6	6	100%
Texas Creek	Int.	6	6	100%
Watson Bar	Low	14	14	100%
Yalakom	Int.	12	12	100%
Total	-	**159**	**157**	**99%**

[a] AUs with less than 100% of the policy target are considered to be in deficit of mature-plus-old growth forest.

5.2.3.2 Biodiversity Emphasis Option and Mature-Plus-Old Forest Distribution Compared to Policy Targets

This section provides an overview of the assessment results summarized by the BEO assigned to LUs. The two AUs that have insufficient mature-plus-old forest to meet the policy targets are in High BEO designations (Table 17). Most AUs in all BEO designations have sufficient amounts of mature-plus-old forest to meet the policy targets. This is an improvement from the old forest indicator, especially in Intermediate and Low BEO where half of AUs met legal targets and all AUs are meeting policy targets.

Table 17. *Summary of Assessment Units (AU) by Biodiversity Emphasis Option (BEO) that are Meeting Policy Targets in the Lillooet Timber Supply Area (TSA).*

	Biodiversity Emphasis Options (BEOs) in the CE-CFLB			
	High BEO	**Intermediate BEO**	**Low BEO**	**Total**
# Assessment Units (AUs) in BEO	36	67	56	159
# AUs Meeting Policy Target	34	67	56	157
% AUs Meeting Policy Targets	94%	100%	100%	99%
CE-CFLB Area (ha) in AUs with Targets	69,001.0	236,394.5	201,601.7	506,997.2
CE-CFLB Area (ha) in AUs Meeting Policy Targets	66,336.4	236,394.5	201,601.7	504,332.6

5.2.3.3 Biogeoclimatic Ecosystem Classification and Mature-plus-Old Forest Distribution Compared to Policy Targets

This section provides an overview of the assessment results summarized by BEC. When considering old growth forest only, there are 15 BEC subzone/variants that have all AUs with sufficient amounts of old growth forest to meet PNOGO targets. When including mature seral forest, there are 27 out of 29 BEC subzones/variants that meet the mature-plus-old forest policy targets (Table 18).

There are two BEC variants that are not meeting the mature-plus-old policy targets: CWH moist sub-maritime (CWHms1) and IDF wet warm (IDFww1). The IDFww1 improved from the old growth indicator, from 29% of AUs meeting the old growth legal target to 86% of AUs meeting the mature-plus-old policy targets. In contrast, the CWHms1 has all AUs (100%) meeting the old growth targets but no AUs (0%) meeting the mature-plus-old targets. The total CE-CFLB of this subzone is relatively small (1,223.4 ha) and is contained within the Duffey Lake LU.

Table 18. *Summary of Assessment Units (AU) by Biogeoclimatic Ecosystem Classification (BEC) Subzone or Variant that are Meeting Policy Targets in the Lillooet Timber Supply Area (TSA).*

BEC Variant[a]	Total Area in BEC (ha)	Total CE-CFLB Area (ha)	Existing Mature-plus-Old Forest in CE-CFLB (ha)	Existing Mature-plus-Old Forest in CE-CFLB (%)	# Assessment Units (AUs)	# of AUs Meeting Policy Target	% of AUs Meeting Policy Targets
CWHms1	1,360.1	1,223.4	572.8	47%	1	0	0%
ESSFdc2	8,825.8	6,117.2	3,974.8	65%	2	2	100%
ESSFdcw	936.5	204.4	156.1	76%	1	1	100%
ESSFdv1	54,859.5	32,711.2	26,304.7	80%	10	10	100%
ESSFdv2	44,771.8	31,994.8	25,924.8	81%	8	8	100%
ESSFdvw	60,899.5	8,162.4	7,336.9	90%	16	16	100%
ESSFmw1	198.4	19.1	19.1	100%	1	1	100%
ESSFmw2	32,874.9	22,349.4	15,799.6	71%	7	7	100%
ESSFmww	18,472.4	3,021.1	2,551.4	84%	6	6	100%
ESSFxc2	1,333.7	1,291.8	1,021.9	79%	1	1	100%
ESSFxc3	36,205.1	32,003.0	19,062.3	60%	4	4	100%
ESSFxcw	6,993.7	2,714.0	1,962.7	72%	5	5	100%
ESSFxv2	28,977.9	24,521.0	15,384.1	63%	3	3	100%
ESSFxvw	7,611.3	2,672.0	2,068.9	77%	3	3	100%
IDFdc	70,501.8	53,906.0	37,224.1	69%	15	15	100%
IDFdk1	62,984.3	56,785.4	40,064.7	71%	5	5	100%
IDFdk2	7,551.6	6,417.5	3,613.4	56%	1	1	100%
IDFdk3	10,860.0	9,936.7	7,306.5	74%	3	3	100%
IDFww1	15,792.2	7,782.3	5,081.8	65%	7	6	86%
IDFxc	53,999.1	29,387.7	23,585.3	80%	12	12	100%
IDFxh2	50,485.2	34,130.9	26,413.4	77%	3	3	100%
IDFxw	7,622.2	6,324.3	5,338.2	84%	3	3	100%
MSdc1	29,385.3	22,351.3	15,847.8	71%	10	10	100%
MSdc3	23,964.9	20,657.8	13,587.9	66%	8	8	100%
MSdm2	14,254.7	11,474.5	6,304.8	55%	2	2	100%
MSmw2	17,314.6	13,317.7	8,018.0	60%	8	8	100%
MSxk3	45,197.0	42,204.2	30,335.7	72%	6	6	100%

BEC Variant[a]	Total Area in BEC (ha)	Total CE-CFLB Area (ha)	Existing Mature-plus-Old Forest in CE-CFLB (ha)	Existing Mature-plus-Old Forest in CE-CFLB (%)	# Assessment Units (AUs)	# of AUs Meeting Policy Target	% of AUs Meeting Policy Targets
MSxv	7,842.7	7,564.2	3,819.5	50%	1	1	100%
PPxh2	37,323.0	15,751.9	12,365.1	78%	7	7	100%
TOTAL	**759,399**	**506,997**	**361,046**	**71%**	**159**	**157**	**99%**

[a] This table demonstrates the distribution of old growth forest across BECs. Only BECs with old growth forest targets are listed in this table.

5.2.4 Limitations

The limitations associated with the mature-plus-old forest indicator are largely a result of the interpretation of the old growth forest management policy, as opposed to limitations with the source data itself (as seen with the old growth forest indicator). Much of the province does not have legally established mature-plus-old forest retention targets, and some areas do not have specific targets for mature forest retention (e.g., the percent target retention is the same for old growth forest as it is for mature-plus-old), therefore mature forest is not directly being managed for in the current policy framework.

5.2.5 Summary and Observations

Overall, 71.7% (395,489.7 ha) of the CE-CFLB is comprised of mature-plus-old forest, with high proportions of mature-plus-old forest across the TSA. There were 57 more AUs meeting mature-plus-old policy targets than AUs meeting old growth targets. At the AU scale, including mature forest in the current condition assessment for old growth forest (mature-plus-old) increased the percentage of AUs meeting targets from 63% (100 out of 159 AUs) to 99% (157 out of 159 AUs). At the LU scale, including mature forest increased the percentage of the CE-CFLB meeting targets from 53.4% (270,569.1 ha of CE-CFLB) to 99.5% (504,332.6 ha of CE-CFLB).

There are 27 out of the 29 BEC subzones/variants that meet the mature-plus-old forest policy targets. The only AU in the CWH moist sub-maritime (Duffey Lake LU-CWHms1) and one AU in the IDF wet warm (Kwoiek LU-IDFww1) BEC zones are not meeting the mature-plus-old policy targets. These AUs are close to meeting the targets (91.8% and 85.2%, respectively) and account for a relatively small total CE-CFLB area (2,664.5 ha or 0.5% of the CE-CFLB).

In the PNOGO, there are provisions that allow the use of younger forests to meet old growth forest targets "where equal or better conservation benefits would result" and to recruit from younger stands when there is insufficient old growth forest in a BEC variant. These provisions may have been applied in the AUs with not enough old growth forest to meet the targets to minimize the socio-economic impacts to forest operations. Further inquiry into the assessment results could examine whether these provisions have been applied appropriately.

5.3 Incursions into Non-Legal Old Growth Management Areas

This assessment compares the area of anthropogenic (human-caused) disturbance footprint (i.e., incursions) in OGMAs relative to allowable incursions specified in the applicable order, policy, or guidance. Incursions are defined as alterations to OGMAs caused by resource development activities that permanently alter the forested land base or that convert forests to an early seral stage (i.e., less than 40 years old). Resource development activities include permitted forestry activities (i.e., cutblocks and roads), non-forestry-related activities (e.g., pipelines, oil and gas, mining, fire guards, urban development, land tenures), and other human use features (i.e., recreation sites and trails).

In this assessment, disturbances only include active, initiated, tenured, and completed developments, and does not consider proposed or anticipated projects and activities. The exception to this is roads due to variation in accuracy of spatial road data, which may result in this dataset being incorrect or incomplete. Incursions into OGMAs were determined using the CE Human Disturbance Layer (2019) and the CE Integrated Roads Layer (2019). Some source data does not include a disturbance date; therefore, it was not possible to remove disturbances that occurred prior to OGMA establishment. As a result, all disturbances were included in this assessment with the exception of historical cutblocks (i.e., 20 years and older). **Consequently, this may skew the assessment results to show incursions that were known and accepted at time of OGMA establishment. At the very least, all OGMA incursions beyond the threshold limits should trigger further inquiry**.

It is common for OGMAs to have historic anthropogenic incursions and natural disturbances included within the OGMA boundary at the time of establishment. This was dependent on the process undertaken at the time of OGMA development. Natural disturbances such as fires, insects, pathogens, and wind will alter forest stand composition within OGMAs over time. **At this time, the OGMA incursions assessment did not consider natural disturbances (e.g., wildfires or insect outbreaks) that were not included in the VRI at the time of data extraction from the BCGW in 2019**. Refer to section 4.3.1 for more information regarding how disturbances were considered in this assessment.

For the Lillooet TSA, allowable OGMA incursions and amendments are managed through the Old Growth Management Area Guidance Thompson Okanagan (ILMB, 2007) Regional OGMA guidance document. **This policy provides objectives that allow incursions for very specific reasons up to 10 ha or 10% of the area of the OGMA, whichever is less, for any single OGMA**. Any incursion beyond this threshold would likely result in the OGMA being replaced with an ecologically suitable area.

The OGMA incursion assessment uses the total OGMA area (ha) to determine if the allowable incursion threshold has been exceeded within the OGMA. The CE-CFLB area within OGMAs and the associated incurred area is provided for information and consistency across the four CE Indicator Assessments. Appendix 3 (Table 25) provides a complete listing of all OGMA incursion types reported by individual OGMAs.

5.3.1 Overview of OGMA Incursions

The Lillooet TSA does not have legally established OGMAs, however there are spatial non-legal OGMAs that are currently being managed to and applied in this assessment. The Old Growth Management Area Guidance Thompson Okanagan (2007) Regional OGMA guidance applies in absence of a legal order in the Lillooet TSA and sets allowable incursion limits. **The regional guidance objectives allow incursions, for very specific reasons (described in Section 3.1), up to 10 ha of 10% of an OGMA, whichever is less, for any single OGMA**. If incursions are beyond the threshold, in most cases an equal or better ecologically suitable replacement must be identified. At the very least, all OGMA incursions beyond the threshold limits should trigger further inquiry.

The total incurred percentage is calculated using total OGMA area (ha) and total OGMA incurred area to determine if the allowable incursion threshold has been exceeded within the OGMA. **The total incurred percentage is intended to reflect the magnitude or scale of anthropogenic disturbance within OGMAs**. It is presented to

demonstrate the importance of area incurred relative to OGMA size. The total incurred percentage reflects potential impacts to the old growth forest biodiversity within the established OGMAs. The CE-CFLB area within OGMAs and the associated incurred area is also provided for information and consistency across the four CE indicators.

5.3.2 Total Amount of Incursions into Non-Legal OGMAs

There are 2,458 non-legal OGMAs across all LUs (except Stein LU) with a total OGMA area of 74,908.3 ha and a CE-CFLB of 64,729.0 ha. Without comparison to the regional guidance allowable incursion thresholds, all LU's with OGMAs have incursions with a total of 562 OGMAs (23% of all OGMAs) with some degree of incursion disturbance (Table 19). There are 1,896 OGMAs with no incursions being reported in this assessment. The total area of all incursions in OGMAs is 483.8 ha which is 0.6% of the total OGMA area. Carpenter Lake North and Hurley LUs have the highest percentage of incurred OGMAs (40% and 36%, respectively. There are two LUs with more than 50 ha of incurred OGMA area in total: Carpenter Lake North (96.4 ha) and Watson Bar (58.5 ha).

Table 19. *Summary of All Incursions in Non-Legal Old Growth Management Areas (OGMAs) by Landscape Unit (LU) in the Lillooet Timber Supply Area (TSA).*

Landscape Unit	Summary of Incursions			Summary by Total OGMA Area			Summary by CE-CFLB Area		
	Total # of OGMAs[a]	Total # of OGMAs with Incursions[b]	% of OGMAs with Incursions	Total OGMA Area in LU (ha)[c]	Total Incurred OGMA Area (ha)	% of Incurred OGMA Area (%)	Total OGMA CE-CFLB Area (ha)	Total Incurred OGMA CE-CFLB Area (ha)	% of Incurred OGMA Area in CE-CFLB (%)
Bridge	109	17	16%	2,828.7	4.9	0.2%	2,388.6	4.9	0.2%
Carpenter Lake North	163	65	40%	4,730.5	96.4	2.0%	4,131.4	93.2	2.3%
Carpenter Lake South	145	21	14%	3,207.5	11.1	0.3%	2,392.1	9.2	0.4%
Connel Creek	96	20	21%	2,136.7	14.6	0.7%	1,717.9	12.1	0.7%
Duffey Lake	326	62	19%	6,964.0	52.2	0.7%	5,477.4	49.8	0.9%
French Bar	136	27	20%	3,552.4	20.2	0.6%	3,017.1	18.5	0.6%
Gun	60	2	3%	1,783.4	0.1	0.0%	1,573.9	0.1	0.0%
Hurley	145	52	36%	3,035.0	34.6	1.1%	2,753.4	33.2	1.2%
Kwoiek	161	32	20%	2,875.8	12.2	0.4%	2,576.3	10.8	0.4%
Lost Creek	61	1	2%	2,652.5	0.6	0.0%	2,225.4	0.1	0.0%
Murray	214	58	27%	7,773.3	51.8	0.7%	7,701.1	50.7	0.7%
Pavilion	150	43	29%	5,683.4	49.1	0.9%	5,520.9	45.0	0.8%
Siska	77	14	18%	3,405.7	15.1	0.4%	2,839.1	13.1	0.5%
Spruce Lake	127	25	20%	4,442.5	26.3	0.6%	4,025.2	25.3	0.6%
Texas Creek	115	14	12%	3,029.8	19.3	0.6%	2,263.5	13.6	0.6%
Watson Bar	264	87	33%	8,747.6	58.5	0.7%	7,459.4	56.4	0.8%
Yalakom	133	24	18%	8,059.5	17.0	0.2%	6,666.2	16.5	0.2%
TOTAL	**2458**	**562**	**23%**	**74,908.3**	**483.8**	**0.6%**	**64,729.0**	**452.5**	**0.7%**

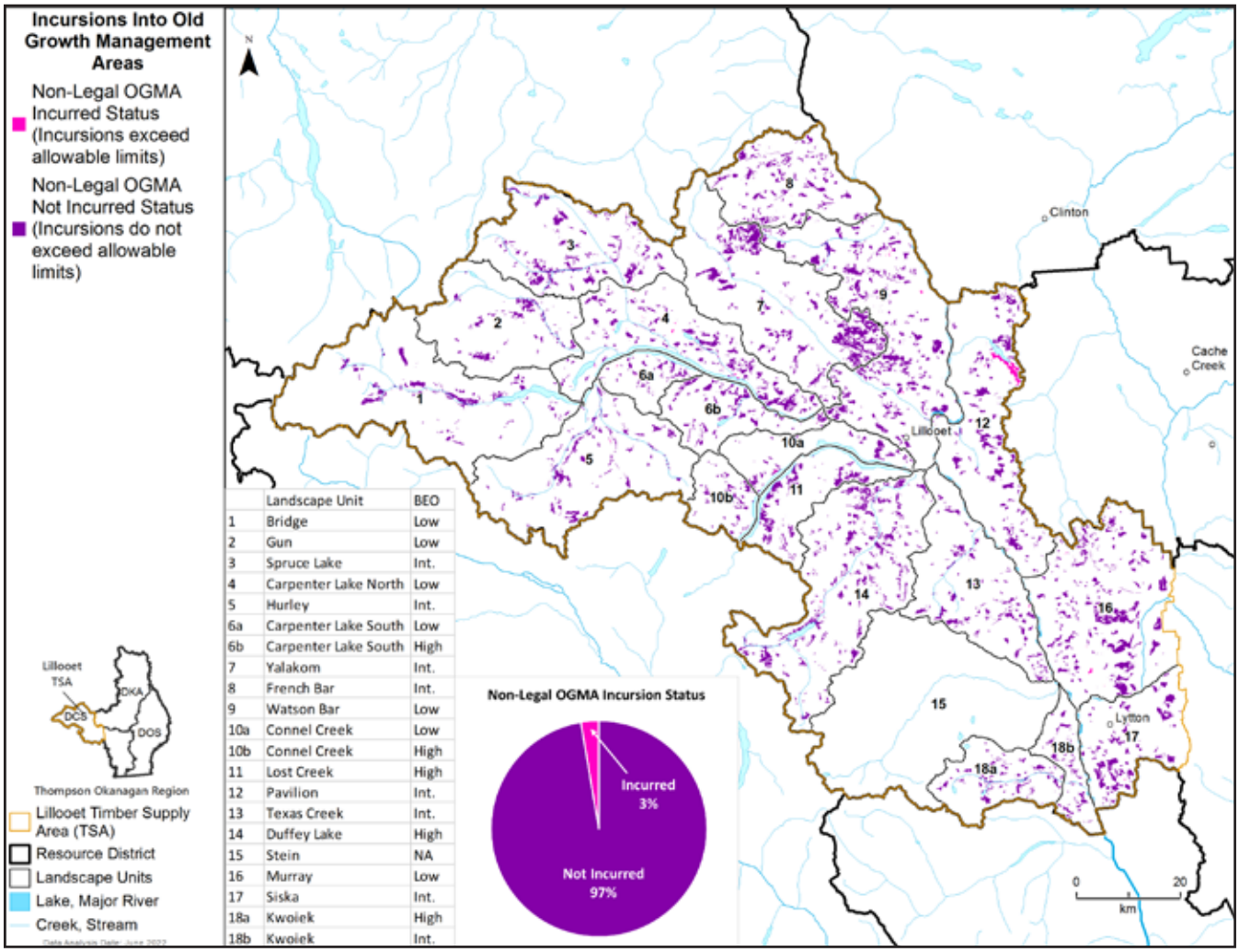
[a] There are OGMAs that span multiple LUs. Therefore, each value in the "Total # of OGMAs" and "# of OGMAs with Incursions" columns are independent of the others in such a way that they do not sum together to equal the total number shown for the Lillooet TSA.

[b] Includes all incursions into the OGMA, regardless of any thresholds defined in legal orders or regional policies.

[c] Slivers less than 0.01 ha have not been included in this summary.

5.3.3 Incursions into Non-Legal OGMAs Compared to Allowable Thresholds in Policy

Comparing the incursions into OGMAs against the allowable thresholds in the regional guidance resulted in 3% of all non-legal OGMAs (66 out of 2,458 total OGMAs) identified as disturbed beyond the acceptable threshold limits (Figure 12, Table 20).



	Landscape Unit	BEO
1	Bridge	Low
2	Gun	Low
3	Spruce Lake	Int.
4	Carpenter Lake North	Low
5	Hurley	Int.
6a	Carpenter Lake South	Low
6b	Carpenter Lake South	High
7	Yalakom	Int.
8	French Bar	Int.
9	Watson Bar	Low
10a	Connel Creek	Low
10b	Connel Creek	High
11	Lost Creek	High
12	Pavilion	Int.
13	Texas Creek	Int.
14	Duffey Lake	High
15	Stein	NA
16	Murray	Low
17	Siska	Int.
18a	Kwoiek	High
18b	Kwoiek	Int.

Figure 12. *Incursions in Non-Legal Old Growth Management Areas (OGMAs) that Exceed the Allowable Incursion Threshold in the Lillooet Timber Supply Area (TSA).*[15]

[15] The insert pie chart illustrates the proportion of non-legal OGMAs with incursions that exceed the allowable threshold.

There 66 OGMAs with incursions that exceed the allowable limits as per the regional guidance occur across most LUs (Table 20). The total area of OGMAs that are in an incurred status (e.g., above allowable threshold) is 1,226.8 ha with the total incursion footprint in these OGMAs of 144.9 ha (11.8% of the total OGMA area). The Carpenter Lake North LU has the largest number of occurrences of incurred OGMAs (17 OGMAs with a total incurred area of 150.0 ha); however, the Pavilion LU has the largest total OGMA area with incurred status (773.5 ha). The Bridge, Gun, and Lost Creek are the only LUs where reported incursions do not exceed the allowable limits.

Table 20. *Summary of Incursions in Non-Legal Old Growth Management Areas (OGMAs) that Exceed the Allowable Incursion Threshold in the Lillooet Timber Supply Area (TSA).*

Landscape Unit	Total OGMAs		Total Area (ha)		Total CE-CFLB Area (ha)		Disturbance Type
	# of OGMAs with Incursions Over Threshold	% of OGMAs with Incursions Over Threshold	Total OGMA area with Incurred Status (ha)	Total Incurred Area in OGMA (ha)[a]	Total OGMA CE-CFLB Area with Incurred Status (ha)	Total Incurred OGMA CE-CFLB Area (ha)	
Carpenter Lake North	17	10%	150.8	49.4	150.0	48.8	Forest Harvesting; Power; Recreation; Roads; Right of Ways
Carpenter Lake South	3	2%	12.9	2.7	8.2	1.9	Roads
Connel Creek	4	4%	20.6	3.0	20.5	2.9	Power; Roads; Right of Ways; Urban
Duffey Lake	12	4%	53.3	12.5	53.3	12.5	Roads
French Bar	1	1%	2.6	0.5	2.6	0.5	Roads
Hurley	4	3%	27.3	3.6	27.2	3.6	Power; Roads
Kwoiek	1	1%	0.9	0.1	0.9	0.1	Roads
Murray	4	2%	49.9	17.5	49.3	16.9	Forest Harvesting; Roads
Pavilion	8	5%	781.2	24.5	773.5	22.2	Agriculture; Forest Harvesting; Mining and Extraction; Power; Roads; Right of Ways
Siska	1	1%	6.5	1.0	6.5	1.0	Power; Roads
Spruce Lake	1	1%	3.5	0.4	1.7	0.3	Roads
Texas Creek	2	2%	32.9	13.5	29.4	10.5	Agriculture; Roads; Right of Ways
Watson Bar	6	2%	67.6	12.9	67.6	12.9	Agriculture; Forest Harvesting; Roads
Yalakom	2	1%	16.8	3.2	16.8	3.2	Forest Harvesting; Roads
TOTAL	**66**	**3%**	**1,226.8**	**144.9**	**1,207.5**	**137.5**	

[a] Incursion areas that are less than 0.01 ha was not included in the disturbance type summary.

5.3.3.1 Disturbance Type of Incursions in Non-Legal OGMAs

A total area of 144.9 ha (137.5 ha of CE-CFLB) of incursions in non-legal OGMAs was identified in this assessment that are beyond the allowable incursion limits (Table 20). The majority of incursions that exceeded the allowable threshold were due to road development (40.2%) followed by forest harvesting (e.g., cutblocks) (28.6%) (Figure 13). The area of each incursion ranges from 0.1 to 15.5 ha. See Appendix 3 Table 25 for further details regarding disturbance types by LU.

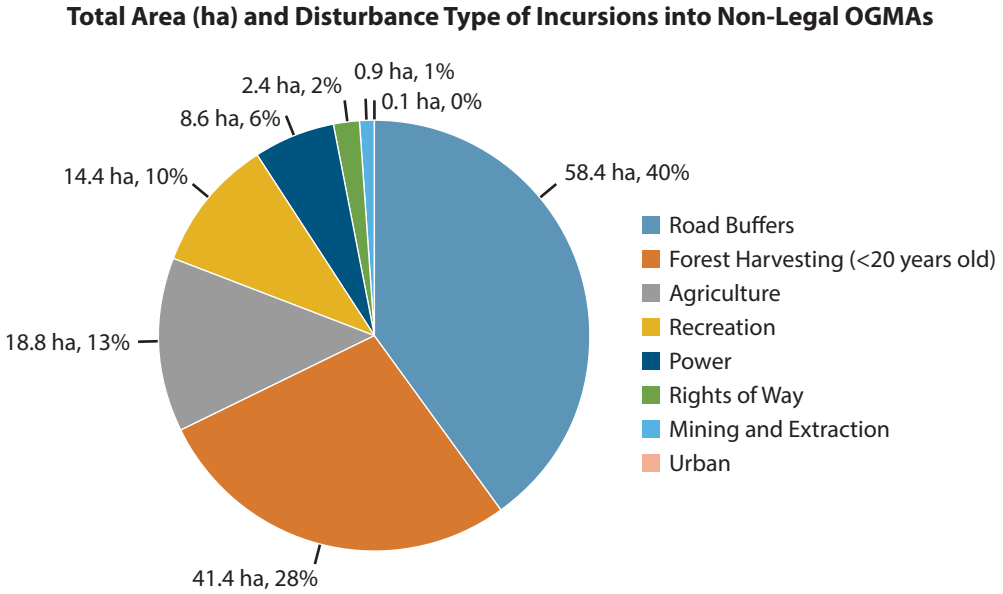
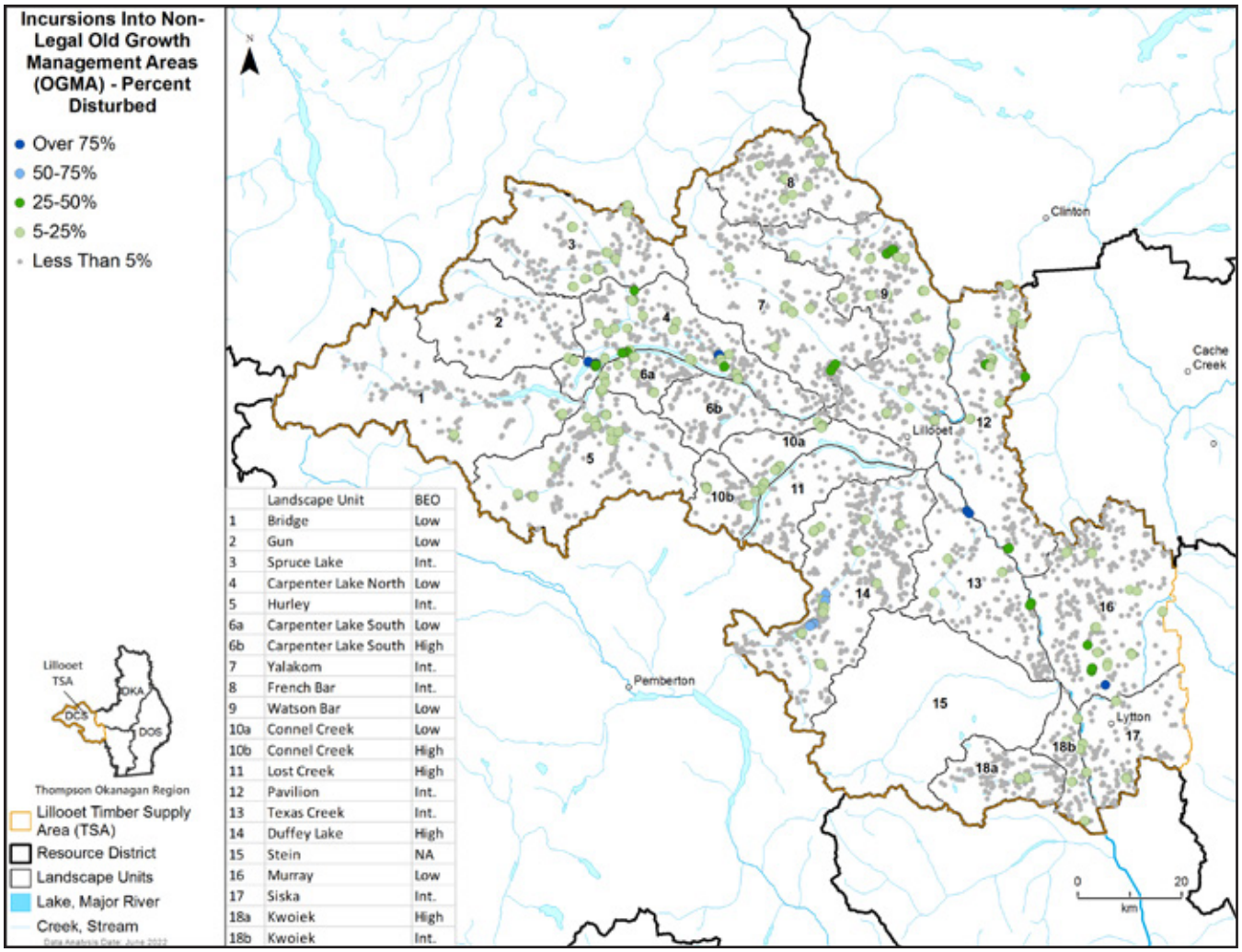


Figure 13. *Distribution of Incursions in Non-Legal Old Growth Management Areas (OGMAs) that Exceed the Allowable Incursion Threshold by Disturbance Type in the Lillooet Timber Supply Area (TSA).*

5.3.3.1 Incursion Magnitude in Non-Legal OGMAs

Magnitude of incursions in OGMAs is assessed to determine the overall impact based on the size of the OGMA and the scale of disturbance (e.g., the smaller the OGMA, the greater the potential impact to the OGMA if disturbance is experienced on all sides adjacent to the OGMA).

In the Lillooet TSA, most non-legal OGMAs (409 out of 2,458 total OGMAs) have incursions that disturb less than 5% of the total OGMA area (Figure 14), followed by incursions that disturb 5 to 25% of the total OGMA area (129 out of 2,458 OGMAs). There are 15 OGMAs with incursions that disturb 25 to 50% of the total OGMA area, four OGMAs with 50 to 75% of the OGMA incurred, and five OGMAs with more than 75%. OGMAs with larger incursions are primarily west of Lillooet and north of Lytton.



	Landscape Unit	BEO
1	Bridge	Low
2	Gun	Low
3	Spruce Lake	Int.
4	Carpenter Lake North	Low
5	Hurley	Int.
6a	Carpenter Lake South	Low
6b	Carpenter Lake South	High
7	Yalakom	Int.
8	French Bar	Int.
9	Watson Bar	Low
10a	Connel Creek	Low
10b	Connel Creek	High
11	Lost Creek	High
12	Pavilion	Int.
13	Texas Creek	Int.
14	Duffey Lake	High
15	Stein	NA
16	Murray	Low
17	Siska	Int.
18a	Kwoiek	High
18b	Kwoiek	Int.

Figure 14. *Magnitude of Incursions into Non-Legal Old Growth Management Areas (OGMAs) in the Lillooet Timber Supply Area (TSA).*

5.3.4 Limitations

This report assesses the amount of incursions into OGMAs due to anthropogenic (human-caused) disturbances. At this time, they do not report on incursions due to natural disturbances for the OGMA incursion indicator due to limitations with the VRI (as discussed in Section 2.2.3).

In this assessment, all incursions were included regardless of when they occurred (e.g., prior to or after the OGMA was established), except for cutblocks. All cutblocks that pre-dated the establishment of the non-legal OGMA and those that occurred more than 20 years before the assessment were removed. As a result, this assessment may over-estimate the amount of incursions due to the inclusion of incursions that were known and considered acceptable at the time of OGMA delineation.

In addition, road widths applied in the assessment were not verified on the ground and instead represent a best estimation based on the available information and input from government staff. Due to the variation in accuracy of spatial road data (e.g., roads represented in the data that were not built on the ground, varying road widths based on local terrain), it is possible that some OGMA incursions due to roads are a result of incorrect road data and not necessarily an actual incursion into the OGMA.

Assessing how OGMAs were designed and implemented as per the provincial policy or guidance was outside the scope of this assessment. The LUPG provided the direction for OGMA delineation based on a rigorous rules-based approach that focused on managing timber supply impacts, ensuring biodiversity conservation was within the timber supply impact levels set by government (i.e., no more than a 4% impact to timber supply). As a result, there may have been unintended outcomes to biodiversity objectives and old growth forest management.

5.3.5 Summary and Observations

There are 2,458 mapped non-legal OGMAs across the Lillooet TSA with a total OGMA area of 74,908.4 ha and a CE-CFLB of 64,729.0 ha. Of these, 562 OGMAs (23%) show some level of disturbance impacting a total OGMA area of 483.8 ha (without comparison to the allowable incursion threshold). Carpenter Lake North and Hurley LUs have the highest percentage of incurred OGMAs (40% and 36%, respectively) however, the total area of incursion in the OGMAs is relatively low (2.3% and 1.2%, respectively). There are two LUs with more than 50 ha of total incurred OGMA area: Carpenter Lake North (96.4 ha) and Watson Bar (58.5 ha). Most OGMA incursions disturb less than 5% of the total OGMA area.

There are 66 OGMAs (3% of all OGMAs) with incursions that exceed the allowable limits as per the regional guidance, impacting 144.9 ha of total OGMA area. The LUs with the greatest incurred OGMA area are Carpenter Lake North (93.2 ha), Watson Bar (56.4 ha), Murray (50.7 ha), and Duffey Lake (49.8 ha). The Bridge, Gun, and Lost Creek are the only LUs where reported incursions do not exceed the allowable limits. Most incursions that exceed the allowable limit were due to road development (40.2%) followed by forest harvesting (i.e., cutblocks) (28.6%).

Incursions into OGMAs may have occurred for several reasons and may have been known at the time of OGMA establishment. It is recommended that further inquiry be completed to better understand the amount, type, and magnitude of OGMA incursions to determine if the intent of the regional guidance is being maintained and if OGMAs need to be replaced or monitored. In addition, OGMAs were intended to have long-term monitoring, however, such monitoring of effectiveness and incursions has not occurred in the Lillooet TSA to date. These OGMA incursion assessment results are the beginnings for future monitoring opportunities.

5.4 Amount of Old Growth Forest in Non-Legal OGMAs Relative to Legal Targets

OGMAs (legal and non-legal) are the implementation strategy used to meet old growth forest retention targets. Identifying how much old growth forest exists within OGMAs relative to legal targets can assess whether OGMAs are currently achieving old growth retention targets in the CE-CFLB. In addition, assessing how much mature forest exists within OGMAs can help identify the amount of potentially eligible stands available for future recruitment to achieve old growth forest and biodiversity objectives.

The LUPG provided a strict "rules-based" approach to designing OGMAs while mitigating impacts to timber supply. Old growth forest retention targets were to be met first in areas with harvesting restrictions (i.e., parks, wildlife habitat areas) before identifying areas for spatial OGMAs in the LU-BEC. If there was not enough old growth forest in the LU-BEC to meet the target, then the next oldest available forest (generally mature forest) could be recruited.

While this assessment includes the amount of old growth forest within other protected areas as part of the overall old growth forest available in each AU, it does not specifically report on the area and amount of old growth forest co-located within these other no-harvest designation areas (e.g., wildlife habitat areas, ungulate winter ranges, parks). Therefore, where the results indicate that the area or amount of old growth forest in OGMAs is not sufficient to meet legal targets, it may be because the remaining amount of old growth forest needed to meet those targets is captured in other protected areas, and further inquiry is required.

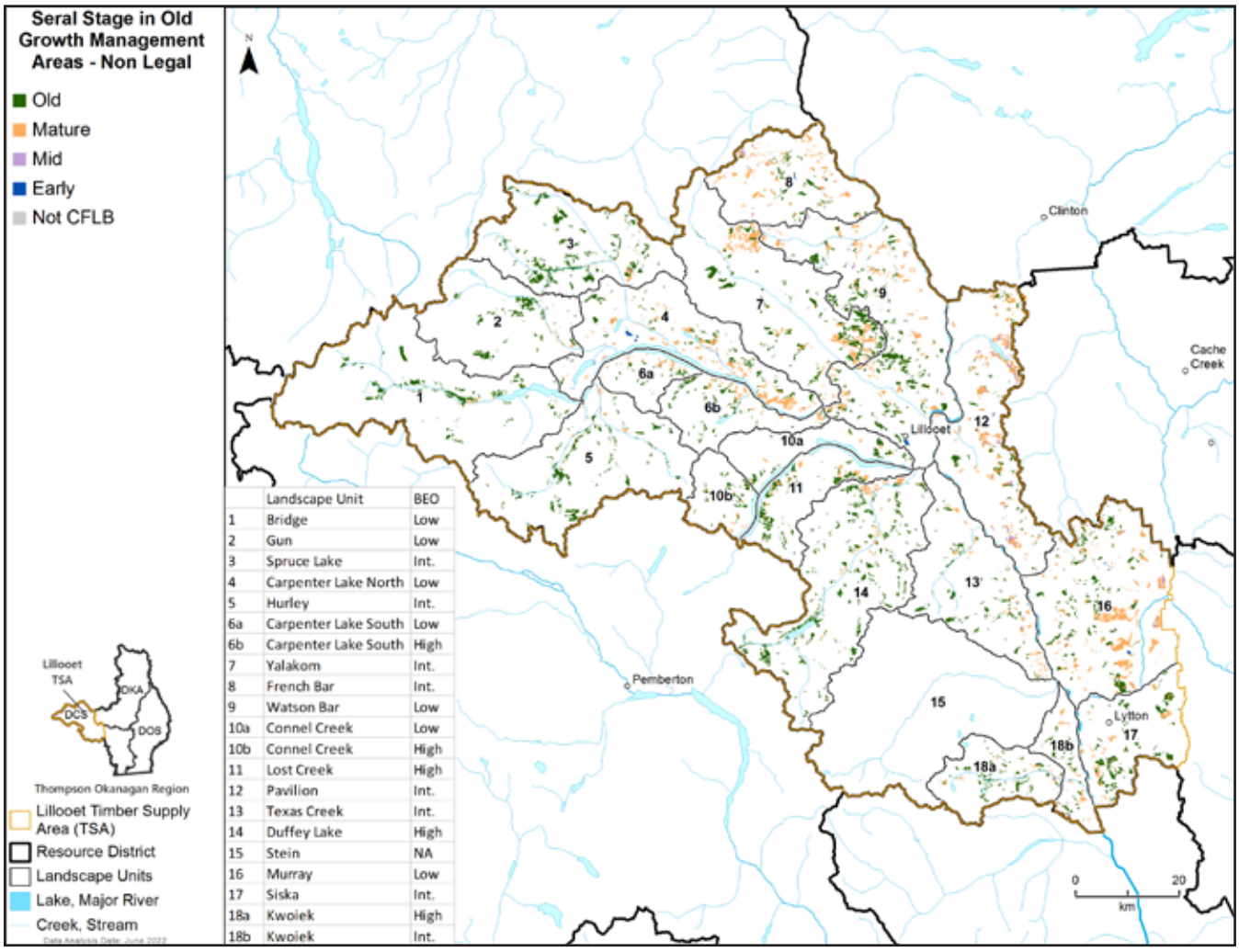
The regional OGMA policy states that OGMAs are to be managed to the polygon (area) to meet the distribution of old growth forest for each LU-BEC. The regional guidance does not require the management of the seral stage within OGMAs. The intent of OGMAs was to meet the target amount of old growth forest under PNOGO. If OGMAs are legally established, the assumption is that the total area within OGMAs meets the old growth forest seral stage targets under PNOGO.

This assessment is intended to provide a starting point for further analysis and inquiry to examine how OGMA designations are meeting legal targets for old growth forest retention.

5.4.1 Overview of Old Growth Forest in Non-Legal OGMAs

The seral stage in non-legal OGMAs shows a general pattern of old seral stage forest in higher elevations west of Highway 12, and mature seral stage forest at lower elevations in the eastern portion of the TSA and along the valley to Carpenter Lake (Figure 15).

There are 2,458 mapped non-legal OGMAs across all LUs (except Stein LU) with a total OGMA area of 74,908.3 ha and a CE-CFLB of 64,729.0 ha. Overall, half of the total area of OGMAs are old seral stage (50.7% or 37,972.6 ha) followed by mature (32.1% or 24,045.9 ha), with small portions of mid (2.4% or 1,826.4 ha) and early (1.0% or 780.3 ha) seral forests. Old growth forest within OGMAs is primarily located in the western portion of the TSA in higher elevation ecosystems.



	Landscape Unit	BEO
1	Bridge	Low
2	Gun	Low
3	Spruce Lake	Int.
4	Carpenter Lake North	Low
5	Hurley	Int.
6a	Carpenter Lake South	Low
6b	Carpenter Lake South	High
7	Yalakom	Int.
8	French Bar	Int.
9	Watson Bar	Low
10a	Connel Creek	Low
10b	Connel Creek	High
11	Lost Creek	High
12	Pavilion	Int.
13	Texas Creek	Int.
14	Duffey Lake	High
15	Stein	NA
16	Murray	Low
17	Siska	Int.
18a	Kwoiek	High
18b	Kwoiek	Int.

Figure 15. *Current Seral Stage of Forests in Non-Legal Old Growth Management Areas (OGMAs) in the Lillooet Timber Supply Area (TSA).*

5.4.2 Amount of Old Growth Forest in Non-Legal OGMAs

Appendix 4 Table 26 provides a summary of the entire Lillooet TSA with the current amount of old growth forest compared to the legal targets for all AUs (LU-BEO-BEC) with non-legal OGMAs. The total OGMA area identified here differs from the OGMA incursion indicator (Table 19) by 103.8 ha because there is area within OGMAs that does not have old growth targets (e.g., BG BEC zone or NDT5). In addition, there are five LU-BECs that would have targets applied as per the PNOGO, however no OGMAs have been established in these units. These include the Bridge LU-IDFxc AU which is relatively small (0.3 ha of CE-CFLB) and the Connel Creek LU-MSdc3 which has 80.9 ha of CE-CFLB and an old growth forest target of 11.3 ha but no OGMAs have been established in this LU-BEC.

There are 27 AUs that are meeting the old growth forest legal targets within non-legal OGMAs mostly within the ESSF (16 AUs or 3,033.3 CE-CFLB ha) and MS (nine AUs or 2,611.3 CE-CFLB ha) BEC zones. In contrast, there are 132 AUs that do not meet the targets, of which 13 AUs have no old growth forest within non-legal OGMAs boundaries. Of the AUs not meeting the old growth target within the non-legal OGMAs, 51 AUs are in the ESSF, 26 AUs in the MS, 48 AUs in the IDF, and seven AUs in PP BEC zones.

The general trend across the Lillooet TSA indicates on average there are more old growth forests available across the CE-CFLB (average 218% of the target being met) than there are currently within non-legal OGMAs (average 54% of the target being met). **This suggests there are old growth forests available across the land base to contribute to the legal targets that are currently not within the non-legal OGMA boundaries**.

5.4.3 Limitations

It is unclear if the non-legal OGMAs in the Lillooet TSA will be converted to legal designations. While there are many AUs with a surplus of old and mature seral stage forests, these areas tend to be located outside of the existing non-legal OGMAs. If these areas are not included in future OGMA designations, they will not be excluded from harvesting opportunities and therefore these areas are less likely to effectively contribute to biodiversity objectives in the near-term.

The provincial policy and guidance put limitations on OGMAs to mitigate impacts to timber supply. For example, OGMA design and locations were prioritized in areas considered uneconomical for forest harvesting or in areas that were managed for other values such as wildlife habitat. This process may have resulted in a trade-off of old growth forest biodiversity for areas that didn't impact timber supply, causing the policies themselves to become a barrier to having old growth forest in OGMAs. As a result, the application of the provincial policy and guidance may have resulted in or contributed to the targets not being met within OGMAs.

5.4.4 Summary and Observations

There is a general pattern of old seral forest in higher elevation OGMAs across the TSA, and mature seral forest in lower elevation OGMAs, the eastern portion of the TSA, and along the valley to Carpenter Lake. Overall, the majority of the area in OGMAs are old growth (50.7%) and mature (32.1%) seral stage forests.

There are 27 AUs that are meeting old growth targets within non-legal OGMAs (i.e., total old growth in OGMAs is enough to meet targets). These are mostly within the ESSF (16 AUs with 3,033.3 ha of CE-CFLB) and MS (nine AUs with 2,611.3 ha of CE-CFLB) BEC zones. There are 132 AUs not meeting the targets within OGMAs. Of these, 13 LU-BEC units have no old growth forest within non-legal OGMA boundaries. Most of the AUs not meeting the old growth forest target are in the MS, IDF, and PP BEC zones.

While there are sufficient amounts of old growth forest in most LUs compared to the legal targets, it is generally not occurring within the non-legal OGMAs (average 54% of the target being met). Old growth forest available in the CE-CFLB outside of the established OGMA boundaries could contribute to these targets. The lack of old growth forest within OGMAs in the majority of AUs suggests that current placement of non-legal OGMAs is not fully capitalizing on the available old growth forest on the landscape.

6 OPPORTUNITIES FOR IMPROVEMENT

The following opportunities related to old growth forest management are identified for consideration:

1. Review current non-legal OGMA locations and seral stage within OGMAs in AUs that do not contain sufficient old growth forest to meet legal targets. The establishment of OGMAs was intended to retain old growth forest in line with PNOGO targets and should be reviewed to better understand if the intended outcomes are being achieved.
2. This assessment shows a general trend of sufficient old growth forest available across many AUs (i.e., the CE-CFLB across the TSA) but not necessarily within the non-legal OGMAs. Determine if there is an opportunity to adjust the non-legal OGMA boundaries to capture more old growth forest that will better support old growth forest biodiversity objectives.
3. Review the current process in place for the tracking and monitoring of OGMA incursions and amendments to ensure the original intent of the OGMAs are maintained.
4. Identify opportunities to integrate the findings of this report, including the CE assessment results and data into planning and decision-making processes (e.g., Forest Landscape Planning, co-management with First Nations).

Additional considerations to improve old growth forest management includes:

- CE assessments present the opportunity to develop trend analyses over time to support the monitoring and tracking of current condition of old growth forest. Consider re-assessing the TSA when new information becomes available or when there are significant changes on the land base.
- When available, consider reviewing the results of the Forest Biodiversity CE assessment to determine how hazards to forest biodiversity could potentially be mitigated through the legal management of old growth (e.g., are non-legal OGMAs ecologically intact old growth forest ecosystems, are there opportunities to ensure recruitment for continued representation of old growth forest by maintaining intact mature forest).
- Complete OGMA impact assessments to better understand the direct and indirect implications of disturbances in OGMAs to determine if the intent of the PNOGO is still being maintained and to identify appropriate mitigation strategies. This includes:
  - Anthropogenic disturbances directly within the OGMA;
  - Residual impacts of resource management activities in the landscape adjacent to the OGMA (e.g., edge effects and isolated OGMAs); and
  - Natural disturbance events within OGMAs as well as the surrounding landscape.
- Review and update the Regional OGMA amendment policy to ensure rigour and transparency around tracking and monitoring of incursions into OGMAs. This update should include how the policy will recognize cumulative impacts in OGMAS and incorporate improved knowledge and science regarding old growth forest.
- Communicate the results of this report to enable consideration of cumulative impacts to old growth forest in natural resource sector permitting and authorizations, where appropriate.
- Although this assessment may indicate surplus amounts (hectares) of old growth and mature forest to sufficiently meet legal or policy targets in several ecosystems, the remaining old growth forest may be highly fragmented or retained in small patches. The presence and location of these old growth forests should be reviewed further to understand what attributes are being maintained in these landscapes and how they contribute to the current state of the land base.

- Consider how old growth management can support climate resilience, mitigation, and adaptation. Remaining patches of old growth forest may provide refugia at the landscape level and support ecosystem resilience as the climate changes. Although small, fragmented patches of old growth forest are not ideal for maintaining functional biodiversity, these areas should become a management priority, particularly in ecosystems with no other old growth forest representation. Additionally, it is well supported in the literature that old growth forests store large amounts of carbon, and their preservation can support carbon management and climate mitigation strategies.

Travis Heckford

7 CONCLUSION

Approximately one third of the CE-CFLB (31.6%) has been identified as old growth forest across the Lillooet TSA. The greatest representation of old and mature forests is in higher elevations and along the southern and eastern portions of the TSA. The higher elevation forests tend to have lower landscape level disturbances which should allow old growth forest to persist over time.

Currently 63% of assessment units (AUs) meet the legal targets for old growth forest (100 AUs), while 59 AUs are not meeting old growth forest targets, nine of which have no old growth forest remaining. The dry, low elevation forests (typical of the IDF and PP BEC zones) have the smallest areas with old growth forest identified and are furthest from the legal targets. There are no landscape units (LUs) with all AUs meeting the legal old growth forest targets. However, there are generally more mature forests across the CE-CFLB (71.7%) that could contribute as recruitment forest in addition to meeting the mature-plus-old forest policy targets. Currently 99% of AUs meet the policy targets for mature-plus-old forest.

The Lillooet TSA does not have legally established OGMAs, however spatial non-legal OGMAs are available to manage old growth forest biodiversity. There are 2,458 non-legal OGMAs, of which 562 OGMAs (23%) have some level of disturbance, while 66 OGMAs (3%) have incursions that exceed the allowable limits. However, the total incurred OGMA area associated with these 66 OGMAs is relatively low (144.9 ha of CE-CFLB) compared to the total CE-CFLB area of OGMAs. The majority of incursions disturbed less than 5% of the OGMA and were primarily due to road development (40.2%) followed by forest harvesting (e.g., cutblocks) (28.6%). In addition, OGMAs have been impacted by wildfires across the land base, however this was not included in the assessment as a disturbance type.

In general, there appears to be more old growth forest available across the land base (average 218% of the target met) than within the non-legal OGMA boundaries (average 54% of the target met). This suggests that current OGMA placement may not be fully capitalizing on the available old growth forest on the landscape. Old growth forests identified outside of current non-legal OGMA locations should be considered to meet legal targets and account for natural disturbances over time.

Old growth forest, mature-plus-old forest, and OGMAs are subject to impacts from a range of resource development activities outside of forestry, as often those sectors are not legally required to mitigate or manage for old growth forest (e.g., mines, land conversion, oil and gas). This assessment provides the first attempt at reporting the cumulative disturbance from all sectors regardless of legal obligations. The results can be considered in context of how new permitting and authorization decisions may contribute to further cumulative impacts and can support the review of current condition of OGMAs to determine if additional management strategies (e.g., amendment, replacement) is required.

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9 APPENDICES

Appendix 1- Summary of Assessment Results

To understand the current condition of old growth forest, the following assessment questions were developed to identify the amount of old growth forest, amount of mature-plus-old forest, incursions into OGMAs, and the amount of old growth forest within OGMAs. Table 21 summarizes the results of the current condition assessment of old growth forest in the Lillooet TSA.

Table 21. *Summary of Current Condition Assessment Results by Cumulative Effects (CE) Indicator in the Lillooet Timber Supply Area (TSA).*

Assessment Questions
Amount of Old Growth Forest
What is the current amount of old growth forest in the CE-CFLB? Where is old growth forest located on the land base?
• 31.6% of CE-CFLB is old growth forest, which covers 174,301.3 ha of total CE-CFLB. • Generally found in higher elevations west of Lillooet and Highway 12, and pockets in the southern portion of the TSA. • The highest percentages of old growth forest exist in the Bridge, Carpenter Lake South, Duffey Lake, and Yalakom LUs.
Which AUs meet the legal targets with old forest?
• 100 out of 159 AUs (63%) meet the legal targets. These AUs account for 53.4% (270,569.9 ha) of the total CE-CFLB. The majority of these AUs have more than 125% of the target being met. • Generally found across the TSA with larger areas meeting the targets in higher elevation forests and the northern portion of the TSA. • 15 out of 29 subzones have all units meeting the legal targets. • All AUs in the CWH (1 AU, 1,223.4 ha of CE-CFLB) and MS (35 AUs, 117,569.9 ha of CE-CFLB), and most of the ESSF (59 AUs, 140,847.9 ha of CE-CFLB) BEC zones are meeting the legal targets.
Which AUs are flagged for further consideration?
• 59 out of 159 AUs (37%) do not meet old growth forest targets. These AUs cover a total of 236,428.1 ha of CE-CFLB. • 9 AUs have no old growth forest to meet targets, which covers a total of 3,831.9 ha of CE-CFLB. • Dry, low elevation ecosystems (IDF and PP BEC zones) are furthest from targets. The IDF (all subzones), PPxh, and ESSFxv BEC subzones have less than 20% of AUs meeting the targets. • No LUs have all AUs meeting the targets.
What are some of the possible reasons for the current condition?
• Natural disturbance – history of insect and pest damage as well as recent and historical wildfires that burnt extensive areas, leaving large areas without old growth stands. • Land use history – forest harvesting, including salvage in response to natural disturbances, particularly in lower elevation valley bottoms that are easily accessible.

Assessment Questions

Amount of Mature-plus-Old Forest

What is the current amount of mature-plus-old forest in the CE-CFLB? Where is mature-plus-old forest located on the land base?

- 71.7% of CE-CFLB is mature-plus-old growth forest, which covers 396,884.0 ha of total CE-CFLB
- Mature-plus-old forest is generally found across the TSA.

Which AUs meet the policy targets with mature-plus-old forest?

- 157 out of 159 assessment units (99%) meet policy targets. These AUs account for 99.5% (504,332.6 ha) of the total CE-CFLB.
- These units are found across the TSA with larger concentrations in higher elevations and along the eastern boundary.
- All 157 AUs have more than 125% of the target met.
- 27 out of 29 subzones have all units meeting the policy targets.
- At the AU scale, including mature forest in the current condition assessment increased the percentage of AUs meeting targets from 63% to 99% in the CE-CFLB.
- At the LU scale, including mature forest in the current condition assessment increased the percentage of LUs meeting targets from 53.4% to 99.5% in the CE-CFLB.

Which AUs are flagged for further consideration?

- 2 out of 159 assessment units (1%) do not meet targets. These are:
- Kwoiek LU-IDFww (1,441.1 ha of CE-CFLB) has 85.2% of the target met,
- Duffey Lake LU-CWHms (1,223.4 ha of CE-CFLB) has 92.3% of the target met.
- The CWHms unit met the old growth target but not the mature-plus-old target.

What are some of the possible reasons for the current condition?

- Targets are being met across the TSA for mature-plus-old forest.

Incursions into Non-Legal OGMAs

Are there anthropogenic incursions in OGMAs? What is the current amount of incursion into OGMAs in the CE-CFLB?

- There are 2,458 spatial non-legal OGMAs in the TSA with a total OGMA area of 74,908.4 ha of which 64,729.0 ha is CE-CFLB.
- 562 OGMAs (23%) have some level of incursion (no incursion threshold applied), impacting a total OGMA incursion area of 483.8 ha.
- The LUs with the greatest incurred OGMAs are Carpenter Lake North (93.2), Watson Bar (56.4 ha), Murray (50.7 ha), and Duffey Lake (49.8 ha).

Do they exceed the Order threshold?

- 66 OGMAs (3%) have incursions exceeding the allowable incursion limits, impacting a total OGMA incursion area of 144.9 ha.
- Some of these incursions are historical and were known and considered acceptable at the time of OGMA establishment.

What is the type of incursion into OGMAs?

- Majority of incursions that exceed the allowable incursion limits were due to road development (40.2%) and forest harvesting (28.6%); however, many roads, were already present when the OGMAs were established.
- Incursions were also due to agriculture and clearing (18.8 ha), recreation (14.4 ha), power (8.6 ha), rights-of-way (2.4 ha), mining and extraction (0.9 ha), and urban (0.1 ha).
- OGMAs have also been impacted by wildfires (outside scope of assessment).

What is the magnitude of incursions into OGMAs (total % incurred)?

- Most incursions disturb 5 to 25% of the total OGMA area.
- 1,896 OGMAs had no incursions.
- 409 OGMAs fall within the <5% magnitude category.
- 129 OGMAs fall within the 5-25% magnitude category.
- 15 OGMAs fall within the 25-50% magnitude category.
- 4 OGMAs fall within the 50-75% magnitude category.
- 5 OGMAs fall within the >75% magnitude category.

Assessment Questions

Amount of Old Forest in Non-Legal OGMAs

What is the current amount of old growth forest in OGMAs in the CE-CFLB? What is the seral stage breakdown? Where is old growth forest located within OGMAs?

- The majority of non-legal OGMAs are old (50.7% or 37,972.6 ha of CE-CFLB) and mature (32.1% or 24,045.9 ha of CE-CFLB) seral stage forests, with small portions of mid (2.4% or 1,826.4 ha of CE-CFLB) and early (1.0% or 780.3 ha of CE-CFLB).
- This is primarily in the western portion of the TSA in higher elevation ecosystems.

Which OGMAs meet and do not meet PNOGO targets by BEC subzone or variant within each LU?

- 27 LU-BEC units meeting the targets in non-legal OGMAs. These are mostly in the ESSF (16 AUs with 3.033.3 ha of CE-CFLB) and MS (9 AUs with 2,611.3 ha of CE-CFLB) BEC zones.
- 132 LU-BECs are not meeting the targets in non-legal OGMAs. These are mostly in the MS, IDF, and PP BEC zones. 13 of these 132 LU-BEC units have no old growth forest within the non-legal OGMA boundaries.
- Despite this, there is an abundance of old growth forest available outside the non-legal OGMA boundaries that could contribute to these targets if incorporated into OGMAs.

Appendix 2- Denominator Table

For all CE Indicators, the Cumulative Effects Crown Forested Land Base (CE-CFLB) is the denominator used for the assessment with the exception of Indicator 3 (Incursions into Old Growth Management Areas (OGMAs)) that is based on the gross area of the OGMA. The sub-totals are provided in Table 22 to show how areas contribute to the total CE-CFLB area and an area breakdown for non-legal OGMAs for CE Indicators 3 and 4.

Table 22. *Denominators used in the Current Condition Assessment by Cumulative Effects (CE) Indicator in the Lillooet Timber Supply Area (TSA).*

CE Indicator	Assessment Results Section	Description	Sub-totals (ha)	Totals (ha)
		Total Gross Area in Lillooet TSA	-	1,125,025
		Total CE-CFLB in Lillooet TSA	-	**551,208**
Old Growth and Mature-plus-Old Forest (Indicator 1 & 2)	5.1 & 5.2	CE-CFLB with No BEO (Stein LU)	36,579	-
		CE-CFLB with No Targets (NDT4 not in Stein LU)	5,505	-
		CE-CFLB with No Targets (NDT5 not in Stein LU)	2,127	-
		Total CE-CFLB with No targets	-	44,211
		CE-CFLB with Legal Targets and Policy Targets	-	**506,997**
Incursions into OGMAs (Indicator 3)	5.3	Total Gross Area in Legal OGMAs	-	-
		Total Gross Area in Non-Legal OGMAs	74,908	-
		Total Gross Area in OGMAs (ALL)		**74,098**
Old Growth in OGMAs (Indicator 4)	5.4	CE-CFLB Area in Legal OGMAs	-	-
		CE-CFLB Area in Non-Legal OGMAs	64,729	-
		CE-CFLB Area in OGMAs (ALL)	-	**64,729**

Appendix 3- Indicator Tables

A gradient colour scale is used to illustrate the current condition of the old growth forest and mature-plus-old forest indicators (a duplicate of Table 8 is shown below for reference).

Gradient Scale for Old Growth and Mature-plus-Old Forest Indicators: Legal and Policy Targets	Indicator Condition Interpretation	Current Condition Status (% of Target Met with Old or Mature-plus-Old Forest)	Analysis Definition (% of Target Met with Old or Mature-plus-Old Forest)
	Below Target	0 – 30%	0 – 29.99%
	Below Target	30 – 50%	30 – 49.99%
	Below Target	50 – 75%	50 – 74.99%
	Below Target	75 – 100%	75 – 99.99%
	Target Met	100 – 110%	100 – 109.99%
	Above Target	110 – 125%	110 – 124.99%
	Above Target	125+%	125+%

In the old growth forest and the mature-plus-old forest indicators, an additional colour theme is presented that also illustrates the current condition of old growth forest or mature-plus-old forest by showing the percent of the CE-CFLB that is old growth or mature-plus-old forest by LU and BEC subzone or variant (a duplicate of the legend in Figure 6 is shown below for reference).

Gradient Scale for Existing Old Forest and Mature + Old Forest	Current Amount of Old Forest or Mature + Old Forest (% of CE-CFLB)
	0 - 10 %
	10 - 20 %
	20 - 30 %
	30 - 50 %
	50 - 70 %
	70 - 100 %

Amount of Old Growth Forest

Table 23 compares the CE-CFLB area (column A), the old growth forest target (column C and column A*C), and the amount of old growth forest (column B) relative to the legal targets for all AUs. The amount of CE-CFLB that is old growth forest within that AU (LU, BEO, and BEC) is shown as a percentage of the total CE-CFLB for that AU (column B/A) using the gradient scale from Figure 9 above. The current condition of that AU (column B/(A*C), meaning the percentage of the old growth forest target that is currently being met in that AU, is then shown using the gradient scale from Table 8 above.

Table 23. *Assessment Units Compared to the Old Growth Forest Legal Targets by Landscape Unit (LU) and Biogeoclimatic Ecosystem Classification (BEC) Subzone or Variant in the Lillooet Timber Supply Area (TSA).*

COLUMN CALCULATIONS:			A	A*C	B	C	B/A	B/(A*C)
Landscape Unit	BEO	BEC Variant	CE-CFLB Area (ha)	Target Old (ha)	Existing Old (ha)	Target Old (%)	Existing Old (%)	% of Target Met
Bridge	Low	ESSFdv1	2,758.0	386.1	1,946.9	14%	70.6%	504%
		ESSFdv2	3,493.4	489.1	2,619.8	14%	75.0%	536%
		ESSFdvw	569.5	79.7	522.0	14%	91.7%	655%
		ESSFmw2	1,123.8	101.1	535.6	9%	47.7%	530%
		IDFdc	2,450.8	318.6	289.9	13%	11.8%	91%
		IDFxc	0.3	0.0	-	13%	0.0%	0%
		MSdc1	3,342.8	468.0	2,458.3	14%	73.5%	525%
		MSdc3	650.4	91.1	531.3	14%	81.7%	584%
		MSmw2	3,090.9	432.7	1,829.3	14%	59.2%	423%
Carpenter Lake North	Low	ESSFdv2	5,772.3	808.1	3,611.4	14%	62.6%	447%
		ESSFdvw	668.1	93.5	560.9	14%	84.0%	600%
		IDFdc	19,032.8	2,474.3	307.5	13%	1.62%	12%
		IDFxc	4,419.5	574.5	98.6	13%	2.2%	17%
		MSdc3	4,419.6	618.7	2,177.4	14%	49.3%	352%
Carpenter Lake South	High	ESSFdv1	2,757.9	579.2	2,446.5	21%	88.7%	422%
		ESSFdv2	60.0	12.6	56.2	21%	93.6%	446%
		ESSFdvw	646.6	135.8	558.3	21%	86.3%	411%
		IDFdc	3,952.0	750.9	318.5	19%	8.1%	42%
		IDFxc	577.4	109.7	27.2	19%	4.7%	25%
		MSdc1	1,765.1	370.7	1,470.9	21%	83.3%	397%
		MSdc3	41.0	8.6	21.1	21%	51.5%	245%
	Low	ESSFdv1	1,806.2	252.9	1,294.1	14%	71.6%	512%
		ESSFdvw	420.2	58.8	369.1	14%	87.8%	627%
		IDFdc	2,702.7	351.3	4.2	13%	0.2%	1%
		MSdc1	1,182.2	165.5	706.5	14%	59.8%	427%

COLUMN CALCULATIONS:			A	A*C	B	C	B/A	B/(A*C)
Landscape Unit	BEO	BEC Variant	CE-CFLB Area (ha)	Target Old (ha)	Existing Old (ha)	Target Old (%)	Existing Old (%)	% of Target Met
Connel Creek	High	ESSFdvw	32.1	6.7	16.9	21%	52.7%	251%
		ESSFmw2	2,148.7	279.3	579.7	13%	27.0%	208%
		ESSFmww	482.0	62.7	181.0	13%	37.6%	289%
		IDFdc	800.6	152.1	135.2	19%	16.9%	89%
		IDFww1	1,209.0	229.7	209.9	19%	17.4%	91%
		MSmw2	739.5	155.3	435.0	21%	58.8%	280%
	Low	ESSFdv1	264.3	37.0	75.6	14%	28.6%	204%
		ESSFdv2	401.9	56.3	313.0	14%	77.9%	556%
		ESSFdvw	239.8	33.6	44.0	14%	18.3%	131%
		ESSFmw2	895.6	80.6	11.2	9%	1.2%	14%
		IDFdc	2,324.1	302.1	195.9	13%	8.4%	65%
		IDFww1	1,030.0	133.9	213.3	13%	20.7%	159%
		IDFxc	1,445.2	187.9	311.9	13%	21.6%	166%
		MSdc1	358.3	50.2	189.9	14%	53.0%	379%
		MSdc3	80.9	11.3	79.5	14%	98.3%	702%
		MSmw2	806.6	112.9	384.1	14%	47.6%	340%
		MSxk3	617.8	86.5	471.4	14%	76.3%	545%
Duffey Lake	High	CWHms1	1,223.4	159.0	394.3	13%	32.2%	248%
		ESSFdv1	9,908.5	2080.8	6,982.2	21%	70.5%	336%
		ESSFdvw	1,500.4	315.1	1,359.5	21%	90.6%	431%
		ESSFmw2	6,057.9	787.5	2,561.4	13%	42.3%	325%
		ESSFmww	728.1	94.7	374.3	13%	51.4%	395%
		IDFdc	4,172.9	792.8	227.1	19%	5.4%	29%
		IDFxc	2,567.1	487.8	287.7	19%	11.2%	59%
		MSdc1	4,522.2	949.7	2,838.0	21%	62.8%	299%
		MSmw2	1,720.8	361.4	903.1	21%	52.5%	250%
French Bar	Int.	ESSFxv2	12,380.4	1,114.2	197.8	9%	1.6%	18%
		ESSFxvw	823.1	74.1	55.8	9%	6.8%	75%
		IDFdk3	5,212.4	677.6	288.2	13%	5.5%	43%
		IDFxw	2,715.7	353.0	196.6	13%	7.2%	56%
		MSxk3	3,164.4	443.0	922.5	14%	29.2%	208%
		MSxv	7,564.2	1,059.0	1397.2	14%	18.5%	132%
Gun	Low	ESSFdv2	7,524.0	1,053.4	4,835.1	14%	64.3%	459%
		ESSFdvw	1,019.8	142.8	810.7	14%	79.5%	568%
		IDFdc	1,358.3	176.6	35.2	13%	2.6%	20%
		MSdc3	1,474.4	206.4	389.6	14%	26.4%	189%

COLUMN CALCULATIONS:			A	A*C	B	C	B/A	B/(A*C)
Landscape Unit	BEO	BEC Variant	CE-CFLB Area (ha)	Target Old (ha)	Existing Old (ha)	Target Old (%)	Existing Old (%)	% of Target Met
Hurley	Int.	ESSFdv1	4,487.2	628.2	3,114.4	14%	69.4%	496%
		ESSFdvw	725.0	101.5	652.6	14%	90.0%	643%
		ESSFmw2	6,691.6	602.2	2,974.9	9%	44.5%	494%
		ESSFmww	804.5	72.4	271.2	9%	33.7%	375%
		IDFdc	1,528.7	198.7	42.6	13%	2.8%	21%
		IDFxc	8.4	1.1	-	13%	0.0%	0%
		MSdc1	6,686.1	936.1	2,221.6	14%	33.2%	237%
		MSmw2	2,093.5	293.1	701.7	14%	33.5%	239%
Kwoiek	High	ESSFdv1	149.7	31.4	63.0	21%	42.1%	200%
		ESSFdvw	116.7	24.5	116.7	21%	100.0%	476%
		ESSFmw2	4585.4	596.1	714.4	13%	15.6%	120%
		ESSFmww	778.0	101.1	158.4	13%	20.4%	157%
		IDFww1	1441.1	273.8	108.7	19%	7.5%	40%
		MSdc1	232.8	48.9	138.6	21%	59.5%	284%
		MSmw2	2579.8	541.8	1487.0	21%	57.6%	274%
	Int.	ESSFdv1	801.1	112.1	735.2	14%	91.8%	656%
		ESSFdvw	51.6	7.2	51.4	14%	99.5%	711%
		ESSFmw2	846.5	76.2	142.0	9%	16.8%	186%
		ESSFmww	211.0	19.0	27.5	9%	13.0%	145%
		IDFdc	1941.0	252.3	235.7	13%	12.1%	93%
		IDFww1	1915.9	249.1	54.7	13%	2.9%	22%
		IDFxc	1200.8	156.1	69.9	13%	5.8%	45%
		MSdc1	927.0	129.8	602.7	14%	65.0%	464%
		MSmw2	1112.3	155.7	332.1	14%	29.9%	213%
		PPxh2	175.5	22.8	-	13%	0.0%	0%
Lost Creek	High	ESSFdv1	3,192.5	670.4	2,755.1	21%	86.3%	411%
		ESSFdvw	267.0	56.1	237.1	21%	88.8%	423%
		IDFdc	2,063.6	392.1	177.2	19%	8.6%	45%
		IDFww1	1,477.6	280.7	473.6	19%	32.1%	169%
		IDFxc	2,592.5	492.6	212.8	19%	8.2%	43%
		MSdc1	736.6	154.7	423.6	21%	57.5%	274%
		MSmw2	1,174.2	246.6	1,021.3	21%	87.0%	414%

COLUMN CALCULATIONS:			A	A*C	B	C	B/A	B/(A*C)
Landscape Unit	BEO	BEC Variant	CE-CFLB Area (ha)	Target Old (ha)	Existing Old (ha)	Target Old (%)	Existing Old (%)	% of Target Met
Murray	Low	ESSFdc2	884.4	123.8	709.1	14%	80.2%	573%
		ESSFxc2	1291.8	180.8	752.1	14%	58.2%	416%
		ESSFxcw	215.2	30.1	71.8	14%	33.4%	238%
		IDFdk1	19072.7	2479.5	950.3	13%	5.0%	38%
		IDFww1	348.6	45.3	-	13%	0.0%	0%
		IDFxh2	15099.3	1962.9	813.0	13%	5.4%	41%
		MSdm2	6027.7	843.9	2796.9	14%	46.4%	331%
		MSxk3	9053.4	1267.5	4608.4	14%	50.9%	364%
		PPxh2	8403.3	1092.4	751.6	13%	8.9%	69%
Pavilion	Int.	ESSFxc3	3,555.8	497.8	1,009.1	14%	28.4%	203%
		ESSFxcw	549.7	77.0	248.0	14%	45.1%	322%
		IDFdk1	12,317.3	1601.3	362.6	13%	2.9%	23%
		IDFdk3	2,403.1	312.4	-	13%	0.0%	0%
		IDFxh2	12,216.1	1588.1	849.0	13%	6.9%	53%
		IDFxw	510.5	66.4	-	13%	0.0%	0%
		MSxk3	12,525.8	1753.6	4,176.2	14%	33.3%	238%
		PPxh2	3,171.2	412.2	163.3	13%	5.1%	40%
Siska	Int.	ESSFdc2	5,232.8	732.6	2,925.0	14%	55.9%	399%
		ESSFdcw	204.4	18.4	10.0	9%	4.9%	54%
		ESSFmw1	19.1	1.7	-	9%	0.0%	0%
		ESSFmww	17.4	1.6	16.0	9%	91.6%	1018%
		IDFdk1	238.5	31.0	22.3	13%	9.4%	72%
		IDFdk2	6,417.5	834.3	734.9	13%	11.5%	88%
		IDFww1	360.1	46.8	-	13%	0.0%	0%
		IDFxc	6.0	0.8	-	13%	0.0%	0%
		IDFxh2	6,815.4	886.0	1,296.6	13%	19.0%	146%
		MSdm2	5,446.8	762.5	1,868.6	14%	34.3%	245%
		PPxh2	1,163.9	151.3	131.5	13%	11.3%	87%
Spruce Lake	Int.	ESSFdv2	6,175.1	864.5	4,324.8	14%	70.0%	500%
		ESSFdvw	616.5	86.3	465.9	14%	75.6%	540%
		ESSFxc3	11,627.2	1627.8	6,539.1	14%	56.2%	402%
		ESSFxcw	1,665.0	233.1	733.6	14%	44.1%	315%
		IDFdc	1,086.3	141.2	27.0	13%	2.5%	19%
		MSdc3	9,995.9	1399.4	4,532.9	14%	45.3%	324%

COLUMN CALCULATIONS:			A	A*C	B	C	B/A	B/(A*C)
Landscape Unit	BEO	BEC Variant	CE-CFLB Area (ha)	Target Old (ha)	Existing Old (ha)	Target Old (%)	Existing Old (%)	% of Target Met
Texas Creek	Int.	ESSFdv1	6,585.8	922.0	4,325.4	14%	65.7%	469%
		ESSFdvw	835.7	117.0	627.9	14%	75.1%	537%
		IDFdc	3,967.5	515.8	459.7	13%	11.6%	89%
		IDFxc	4,566.9	593.7	362.0	13%	7.9%	61%
		MSdc1	2598.2	363.7	1,502.7	14%	57.8%	413%
		PPxh2	1,379.5	179.3	49.1	13%	3.6%	27%
Watson Bar	Low	ESSFdv2	2,088.4	292.4	1,574.4	14%	75.4%	538%
		ESSFdvw	45.6	6.4	45.6	14%	100.0%	714%
		ESSFxc3	12,686.1	1776.0	5,561.8	14%	43.8%	313%
		ESSFxcw	175.6	24.6	89.9	14%	51.2%	366%
		ESSFxv2	3,061.8	275.6	57.6	9%	1.9%	21%
		ESSFxvw	443.3	39.9	14.2	9%	3.2%	36%
		IDFdc	3,843.7	499.7	330.8	13%	8.6%	66%
		IDFdk1	13,871.1	1803.2	880.8	13%	6.4%	49%
		IDFdk3	2,321.1	301.7	38.3	13%	1.6%	13%
		IDFxc	8,377.6	1089.1	901.0	13%	10.8%	83%
		IDFxw	3,098.1	402.8	287.9	13%	9.3%	71%
		MSdc3	966.4	135.3	576.9	14%	59.7%	426%
		MSxk3	11,156.2	1561.9	3,316.0	14%	29.7%	212%
		PPxh2	1,325.6	172.3	140.3	13%	10.6%	81%
Yalakom	Int.	ESSFdv2	6,479.7	907.2	4,957.1	14%	76.5%	546%
		ESSFdvw	407.7	57.1	393.9	14%	96.6%	690%
		ESSFxc3	4,133.9	578.7	3,267.2	14%	79.0%	565%
		ESSFxcw	108.5	15.2	103.3	14%	95.2%	680%
		ESSFxv2	9,078.8	817.1	684.9	9%	7.5%	84%
		ESSFxvw	1,405.6	126.5	213.3	9%	15.2%	169%
		IDFdc	2,681.1	348.5	100.2	13%	3.7%	29%
		IDFdk1	11,285.7	1467.1	1,306.2	13%	11.6%	89%
		IDFxc	3,625.9	471.4	422.8	13%	11.7%	90%
		MSdc3	3,029.2	424.1	1,391.7	14%	45.9%	328%
		MSxk3	5,686.4	796.1	3,322.5	14%	58.4%	417%
		PPxh2	132.9	17.3	50.0	13%	37.6%	290%

Amount of Mature-plus-Old Forest

Table 24 compares the CE-CFLB area (column A), the mature-plus-old forest target (column B), and the amount of mature-plus-old forest (column C) relative to the policy targets for all AUs. The amount of CE-CFLB that is mature-plus-old forest within that AU (LU, BEO, and BEC) is shown as a percentage of the total CE-CFLB for that AU (column C/A), using the gradient scale from Figure 9 above. The current condition of that AU (column C/B), meaning the percentage of the mature-plus-old forest target that is currently being met in that AU, is then shown using the gradient scale from Table 8 above.

Table 24. *Assessment Units Compared to the Mature-plus-Old Growth Forest Policy Targets by Landscape Unit (LU) and Biogeoclimatic Ecosystem Classification (BEC) Subzone or Variant in the Lillooet Timber Supply Area (TSA).*

COLUMNS:			A	B	C	-	C/A	C/B
Landscape Unit	BEO	BEC Variant	CE-CFLB Area (ha)	Target Mat+Old (ha)	Existing Mat+Old (ha)	Target Mat+Old (%)	Existing Mat+Old (%)	% of Target Met
Bridge	Low	ESSFdv1	2,758.0	386.1	2,255.8	14%	81.8%	584%
		ESSFdv2	3,493.4	489.1	2,994.8	14%	85.7%	612%
		ESSFdvw	569.5	79.7	529.6	14%	93.0%	664%
		ESSFmw2	1,123.8	157.3	983.0	14%	87.5%	625%
		IDFdc	2,450.8	416.6	2,025.9	17%	82.7%	486%
		IDFxc	0.3	0.1	0.3	17%	100.0%	588%
		MSdc1	3,342.8	468.0	2,840.6	14%	85.0%	607%
		MSdc3	650.4	91.1	646.3	14%	99.4%	710%
		MSmw2	3,090.9	432.7	2,054.4	14%	66.5%	475%
Carpenter Lake North	Low	ESSFdv2	5,772.3	808.1	5,024.6	14%	87.0%	622%
		ESSFdvw	668.1	93.5	639.7	14%	95.7%	684%
		IDFdc	19,032.8	3,235.6	11,819.6	17%	62.1%	365%
		IDFxc	4,419.5	751.3	3,410.0	17%	77.2%	454%
		MSdc3	4,419.6	618.7	3,587.7	14%	81.2%	580%
Carpenter Lake South	High	ESSFdv1	2,757.9	937.7	2,664.1	34%	96.6%	284%
		ESSFdv2	60.0	20.4	56.3	34%	93.8%	276%
		ESSFdvw	646.6	219.9	616.0	34%	95.3%	280%
		IDFdc	3,952.0	2,015.5	3,537.4	51%	89.5%	176%
		IDFxc	577.4	294.5	548.6	51%	95.0%	186%
		MSdc1	1,765.1	688.4	1,684.6	39%	95.4%	245%
		MSdc3	41.0	16.0	39.0	39%	95.1%	244%
	Low	ESSFdv1	1,806.2	252.9	1,422.5	14%	78.8%	563%
		ESSFdvw	420.2	58.8	384.1	14%	91.4%	653%
		IDFdc	2,702.7	459.5	2,146.5	17%	79.4%	467%
		MSdc1	1,182.2	165.5	1,059.4	14%	89.6%	640%

COLUMNS:			A	B	C	-	C/A	C/B
Landscape Unit	BEO	BEC Variant	CE-CFLB Area (ha)	Target Mat+Old (ha)	Existing Mat+Old (ha)	Target Mat+Old (%)	Existing Mat+Old (%)	% of Target Met
Connel Creek	High	ESSFdvw	32.1	10.9	32.1	34%	100.0%	294%
		ESSFmw2	2,148.7	902.5	1,699.2	42%	79.1%	188%
		ESSFmww	482.0	202.4	447.9	42%	92.9%	221%
		IDFdc	800.6	408.3	647.6	51%	80.9%	159%
		IDFww1	1,209.0	616.6	845.9	51%	70.0%	137%
		MSmw2	739.5	288.4	537.7	39%	72.7%	186%
	Low	ESSFdv1	264.3	37.0	75.6	14%	28.6%	204%
		ESSFdv2	401.9	56.3	314.7	14%	78.3%	559%
		ESSFdvw	239.8	33.6	44.0	14%	18.3%	131%
		ESSFmw2	895.6	125.4	462.2	14%	51.6%	369%
		IDFdc	2,324.1	395.1	1,695.0	17%	72.9%	429%
		IDFww1	1,030.0	175.1	636.1	17%	61.8%	363%
		IDFxc	1,445.2	245.7	1,103.1	17%	76.3%	449%
		MSdc1	358.3	50.2	303.8	14%	84.8%	606%
		MSdc3	80.9	11.3	80.5	14%	99.5%	710%
		MSmw2	806.6	112.9	478.8	14%	59.4%	424%
		MSxk3	617.8	86.5	496.7	14%	80.4%	574%
Duffey Lake	High	CWHms1	1,223.4	624.0	572.8	51%	46.8%	92%
		ESSFdv1	9,908.5	3,368.9	7,515.5	34%	75.8%	223%
		ESSFdvw	1,500.4	510.1	1,379.6	34%	91.9%	270%
		ESSFmw2	6,057.9	2,544.3	4,074.2	42%	67.3%	160%
		ESSFmww	728.1	305.8	643.2	42%	88.3%	210%
		IDFdc	4,172.9	2,128.2	2,952.7	51%	70.8%	139%
		IDFxc	2,567.1	1,309.2	2,154.2	51%	83.9%	165%
		MSdc1	4,522.2	1,763.7	3,123.4	39%	69.1%	177%
		MSmw2	1,720.8	671.1	913.8	39%	53.1%	136%
French Bar	Int.	ESSFxv2	12,380.4	3,466.5	7,014.7	28%	56.7%	202%
		ESSFxvw	823.1	230.5	515.8	28%	62.7%	224%
		IDFdk3	5,212.4	1,772.2	3,823.5	34%	73.4%	216%
		IDFxw	2,715.7	923.3	2,548.2	34%	93.8%	276%
		MSxk3	3,164.4	822.8	2,246.6	26%	71.0%	273%
		MSxv	7,564.2	1,966.7	3,819.5	26%	50.5%	194%
Gun	Low	ESSFdv2	7,524.0	1,053.4	5,645.8	14%	75.0%	536%
		ESSFdvw	1,019.8	142.8	929.3	14%	91.1%	651%
		IDFdc	1,358.3	230.9	728.3	17%	53.6%	315%
		MSdc3	1,474.4	206.4	586.8	14%	39.8%	284%

COLUMNS:			A	B	C	-	C/A	C/B
Landscape Unit	BEO	BEC Variant	CE-CFLB Area (ha)	Target Mat+Old (ha)	Existing Mat+Old (ha)	Target Mat+Old (%)	Existing Mat+Old (%)	% of Target Met
Hurley	Int.	ESSFdv1	4,487.2	1,032.1	3,612.7	23%	80.5%	350%
		ESSFdvw	725.0	166.7	676.7	23%	93.3%	406%
		ESSFmw2	6,691.6	1,873.6	5,049.0	28%	75.5%	269%
		ESSFmww	804.5	225.3	672.8	28%	83.6%	299%
		IDFdc	1,528.7	519.7	940.2	34%	61.5%	181%
		IDFxc	8.4	2.9	7.6	34%	90.4%	266%
		MSdc1	6,686.1	1,738.4	3,369.1	26%	50.4%	194%
		MSmw2	2,093.5	544.3	729.8	26%	34.9%	134%
Kwoiek	High	ESSFdv1	149.7	50.9	88.5	34%	59.1%	174%
		ESSFdvw	116.7	39.7	116.7	34%	100.0%	294%
		ESSFmw2	4,585.4	1,925.9	3,080.0	42%	67.2%	160%
		ESSFmww	778.0	326.8	598.9	42%	77.0%	183%
		IDFww1	1,441.1	735.0	625.9	51%	43.4%	85%
		MSdc1	232.8	90.8	222.8	39%	95.7%	245%
		MSmw2	2,579.8	1,006.1	1,668.8	39%	64.7%	166%
	Int.	ESSFdv1	801.1	184.2	751.5	23%	93.8%	408%
		ESSFdvw	51.6	11.9	51.6	23%	100.0%	435%
		ESSFmw2	846.5	237.0	452.0	28%	53.4%	191%
		ESSFmww	211.0	59.1	171.1	28%	81.1%	290%
		IDFdc	1,941.0	660.0	1,130.8	34%	58.3%	171%
		IDFww1	1,915.9	651.4	1,095.2	34%	57.2%	168%
		IDFxc	1,200.8	408.3	525.8	34%	43.8%	129%
		MSdc1	927.0	241.0	625.5	26%	67.5%	260%
		MSmw2	1,112.3	289.2	469.7	26%	42.2%	162%
		PPxh2	175.5	59.7	74.8	34%	42.6%	125%
Lost Creek	High	ESSFdv1	3,192.5	1,085.5	3,006.2	34%	94.2%	277%
		ESSFdvw	267.0	90.8	253.8	34%	95.1%	280%
		IDFdc	2,063.6	1,052.5	1,809.1	51%	87.7%	172%
		IDFww1	1,477.6	753.6	1,359.8	51%	92.0%	180%
		IDFxc	2,592.5	1,322.2	2,143.5	51%	82.7%	162%
		MSdc1	736.6	287.3	722.8	39%	98.1%	252%
		MSmw2	1,174.2	457.9	1,165.1	39%	99.2%	254%

COLUMNS:			A	B	C	-	C/A	C/B
Landscape Unit	BEO	BEC Variant	CE-CFLB Area (ha)	Target Mat+Old (ha)	Existing Mat+Old (ha)	Target Mat+Old (%)	Existing Mat+Old (%)	% of Target Met
Murray	Low	ESSFdc2	884.4	123.8	712.1	14%	80.5%	575%
		ESSFxc2	1,291.8	180.8	1,021.9	14%	79.1%	565%
		ESSFxcw	215.2	30.1	182.6	14%	84.9%	606%
		IDFdk1	19,072.7	3,242.4	12,478.7	17%	65.4%	385%
		IDFww1	348.6	59.3	213.7	17%	61.3%	361%
		IDFxh2	15,099.3	2,566.9	11,934.7	17%	79.0%	465%
		MSdm2	6,027.7	843.9	3,657.2	14%	60.7%	433%
		MSxk3	9,053.4	1,267.5	6,612.8	14%	73.0%	522%
		PPxh2	8,403.3	1,428.6	7,175.1	17%	85.4%	502%
Pavilion	Int.	ESSFxc3	3,555.8	817.8	1,868.3	23%	52.5%	228%
		ESSFxcw	549.7	126.4	366.3	23%	66.6%	290%
		IDFdk1	12,317.3	4,187.9	9,245.0	34%	75.1%	221%
		IDFdk3	2,403.1	817.1	1,685.7	34%	70.1%	206%
		IDFxh2	12,216.1	4,153.5	9,555.4	34%	78.2%	230%
		IDFxw	510.5	173.6	502.2	34%	98.4%	289%
		MSxk3	12,525.8	3,256.7	9,637.6	26%	76.9%	296%
		PPxh2	3,171.2	1,078.2	1,711.9	34%	54.0%	159%
Siska	Int.	ESSFdc2	5,232.8	1,203.5	3,262.8	23%	62.4%	271%
		ESSFdcw	204.4	57.2	156.1	28%	76.4%	273%
		ESSFmw1	19.1	5.3	19.1	28%	100.0%	357%
		ESSFmww	17.4	4.9	17.4	28%	100.0%	357%
		IDFdk1	238.5	81.1	128.7	34%	54.0%	159%
		IDFdk2	6,417.5	2,181.9	3,613.4	34%	56.3%	166%
		IDFww1	360.1	122.4	305.1	34%	84.7%	249%
		IDFxc	6.0	2.1	6.0	34%	99.8%	294%
		IDFxh2	6,815.4	2,317.2	4,923.3	34%	72.2%	212%
		MSdm2	5,446.8	1,416.2	2,647.6	26%	48.6%	187%
		PPxh2	1,163.9	395.7	955.6	34%	82.1%	241%
Spruce Lake	Int.	ESSFdv2	6,175.1	1,420.27	5,034.34	23%	81.5%	354%
		ESSFdvw	616.5	141.79	536.97	23%	87.1%	379%
		ESSFxc3	11,627.2	2,674.26	7,094.97	23%	61.0%	265%
		ESSFxcw	1,665.0	382.96	1,202.69	23%	72.2%	314%
		IDFdc	1,086.3	369.33	811.44	34%	74.7%	220%
		MSdc3	9,995.9	2,598.93	5,753.53	26%	57.6%	221%

COLUMNS:			A	B	C	-	C/A	C/B
Landscape Unit	BEO	BEC Variant	CE-CFLB Area (ha)	Target Mat+Old (ha)	Existing Mat+Old (ha)	Target Mat+Old (%)	Existing Mat+Old (%)	% of Target Met
Texas Creek	Int.	ESSFdv1	6,585.81	1,514.74	4,912.32	23%	74.6%	324%
		ESSFdvw	835.74	192.22	704.93	23%	84.3%	367%
		IDFdc	3,967.47	1,348.94	2,791.46	34%	70.4%	207%
		IDFxc	4,566.87	1,552.73	3,713.68	34%	81.3%	239%
		MSdc1	2,598.18	675.53	1,895.90	26%	73.0%	281%
		PPxh2	1,379.45	469.01	1,264.79	34%	91.7%	270%
Watson Bar	Low	ESSFdv2	2,088.4	292.4	1,709.5	14%	81.9%	585%
		ESSFdvw	45.6	6.4	45.6	14%	100.0%	714%
		ESSFxc3	12,686.1	1,776.0	6,526.9	14%	51.4%	367%
		ESSFxcw	175.6	24.6	104.6	14%	59.6%	426%
		ESSFxv2	3,061.8	428.7	1,296.6	14%	42.3%	302%
		ESSFxvw	443.3	62.1	228.4	14%	51.5%	368%
		IDFdc	3,843.7	653.4	2,393.8	17%	62.3%	366%
		IDFdk1	13,871.1	2,358.1	8,355.2	17%	60.2%	354%
		IDFdk3	2,321.1	394.6	1,797.4	17%	77.4%	456%
		IDFxc	8,377.6	1,424.2	6,639.1	17%	79.2%	466%
		IDFxw	3,098.1	526.7	2,287.7	17%	73.8%	434%
		MSdc3	966.4	135.3	680.4	14%	70.4%	503%
		MSxk3	11,156.2	1,561.9	6,018.7	14%	53.9%	385%
		PPxh2	1,325.6	225.4	1,083.1	17%	81.7%	481%
Yalakom	Int.	ESSFdv2	6,479.7	1,490.3	5,144.6	23%	79.4%	345%
		ESSFdvw	407.7	93.8	396.3	23%	97.2%	423%
		ESSFxc3	4,133.9	950.8	3,572.1	23%	86.4%	376%
		ESSFxcw	108.5	25.0	106.5	23%	98.2%	427%
		ESSFxv2	9,078.8	2,542.1	7,072.9	28%	77.9%	278%
		ESSFxvw	1,405.6	393.6	1,324.7	28%	94.2%	337%
		IDFdc	2,681.1	911.6	1,794.3	34%	66.9%	197%
		IDFdk1	11,285.7	3,837.1	9,857.1	34%	87.3%	257%
		IDFxc	3,625.9	1,232.8	3,333.3	34%	91.9%	270%
		MSdc3	3,029.2	787.6	2,213.6	26%	73.1%	281%
		MSxk3	5,686.4	1,478.5	5,323.2	26%	93.6%	360%
		PPxh2	132.9	45.2	99.8	34%	75.1%	221%

Incursions into Non-Legal OGMAs

Table 25 is provided as additional detail for the OGMA indicator to show a summary of incursions into non-legal OGMAs that exceed the allowable incursion threshold by disturbance type. An OGMA may have multiple incursions reported within them; these are represented in the table below with multiple records for an individual OGMA ID. For example, the OGMA "KAM_TLI_217" has two recorded instances of incursions: 0.8 ha of incurred area due to forest harvesting, and 0.5 ha of incurred area due to roads. Where multiple incursions are reported, a "total disturbance" row is provided that summarizes all incursions within that individual OGMA.

Table 25. *Detailed Breakdown of Incursions in Non-Legal Old Growth Management Areas (OGMAs) that Exceed the Allowable Incursion Threshold by Disturbance Type in the Lillooet Timber Supply Area (TSA).*

Landscape Unit	OGMA ID	Total OGMA Area (ha)	Total OGMA CE-CFLB Area (ha)	Incurred OGMA Area (ha)	Incurred OGMA %	Incurred CFLB Area (ha)	Incurred CFLB %	Disturbance Type
Carpenter Lake North	KAM_TLI_217	3.0	3.0	0.8	28%	0.8	28%	Forest Harvesting
				0.5	17%	0.5	17%	Roads
				1.3	45%	1.3	45%	Total Disturbance
	KAM_TLI_286	2.7	2.7	0.5	17%	0.5	17%	Forest Harvesting
	KAM_TLI_313	5.0	5.0	0.6	12%	0.6	12%	Roads
	KAM_TLI_329	3.7	3.7	0.5	14%	0.5	14%	Roads
	KAM_TLI_330	6.1	6.1	0.6	11%	0.6	11%	Forest Harvesting
	KAM_TLI_332	17.2	17.2	2.2	13%	2.2	13%	Forest Harvesting
				1.4	8%	1.4	8%	Roads
				3.6	21%	3.6	21%	Total Disturbance
	KAM_TLI_385	12.3	12.3	0.5	4%	0.5	4%	Power
				1.0	8%	1.0	8%	Roads
				1.5	12%	1.5	12%	Total Disturbance
	KAM_TLI_390	4.2	4.2	0.4	11%	0.4	11%	Power
				0.8	18%	0.8	18%	Roads
				1.2	29%	1.2	29%	Total Disturbance
	KAM_TLI_391	11.5	11.5	1.8	15%	1.8	15%	Power
				1.6	14%	1.6	14%	Roads
				0.1	1%	0.1	1%	Right of Way
				3.4	30%	3.4	30%	Total Disturbance
	KAM_TLI_394	12.6	12.6	9.4	74%	9.4	74%	Forest Harvesting
				0.2	2%	0.2	2%	Roads
				9.6	76%	9.6	76%	Total Disturbance
	KAM_TLI_421	11.1	10.4	9.1	82%	8.8	85%	Recreation
				0.9	8%	0.7	7%	Roads
				10.0	90%	9.5	92%	Total Disturbance
	KAM_TLI_422	4.1	4.0	3.9	93%	3.8	93%	Recreation
				0.3	7%	0.3	7%	Roads
				4.1	100%	4.0	100%	Total Disturbance

Landscape Unit	OGMA ID	Total OGMA Area (ha)	Total OGMA CE-CFLB Area (ha)	Incurred OGMA Area (ha)	Incurred OGMA %	Incurred CFLB Area (ha)	Incurred CFLB %	Disturbance Type
Carpenter Lake North	KAM_TLI_438	3.4	3.3	0.2	6%	0.2	6%	Forest Harvesting
				1.4	42%	1.4	41%	Recreation
				0.04	1%	0.04	1%	Roads
				1.6	49%	1.6	49%	Total Disturbance
	KAM_TLI_439	5.3	5.3	1.6	31%	1.6	31%	Roads
	KAM_TLI_462	14.6	14.6	3.2	22%	3.2	22%	Forest Harvesting
	KAM_TLI_491	31.0	31.0	1.6	5%	1.6	5%	Power
				3.4	11%	3.4	11%	Roads
				0.6	2%	0.6	2%	Right of Way
				5.7	18%	5.7	18%	Total Disturbance
	KAM_TLI_1923	3.2	3.2	0.3	11%	0.3	11%	Roads
Carpenter Lake South	KAM_TLI_465	4.6	0.0	0.9	19%	0.0	0%	Roads
	KAM_TLI_2083	2.2	2.1	0.4	17%	0.4	18%	Roads
	KAM_TLI_2459	6.1	6.1	1.5	25%	1.5	25%	Roads
Connel Creek	KAM_TLI_835	16.5	16.5	0.1	1%	0.1	1%	Power
				1.4	8%	1.4	8%	Roads
				0.9	6%	0.9	6%	Right of Way
				2.4	15%	2.4	15%	Total Disturbance
	KAM_TLI_876	0.7	0.7	0.1	12%	0.1	12%	Roads
	KAM_TLI_2178	2.3	2.2	0.1	5%	0.1	5%	Roads
				0.05	2%	0.04	2%	Right of Way
				0.1	4%	0.0	0%	Urban
				0.3	11%	0.2	7%	Total Disturbance
	KAM_TLI_2216	1.0	1.0	0.2	23%	0.2	23%	Roads
Duffey Lake	KAM_TLI_957	2.2	2.2	0.5	23%	0.5	23%	Roads
	KAM_TLI_982	1.0	1.0	0.1	11%	0.1	11%	Roads
	KAM_TLI_1000	0.6	0.6	0.1	14%	0.1	14%	Roads
	KAM_TLI_1207	2.5	2.5	0.3	10%	0.3	10%	Roads
	KAM_TLI_1236	3.6	3.6	2.4	66%	2.4	66%	Roads
	KAM_TLI_1256	10.3	10.3	1.6	16%	1.6	16%	Roads
	KAM_TLI_1257	2.1	2.1	1.4	68%	1.4	68%	Roads
	KAM_TLI_2307	17.0	16.9	2.6	15%	2.6	15%	Roads
	KAM_TLI_2343	1.4	1.4	0.8	59%	0.8	59%	Roads
	KAM_TLI_2344	1.6	1.6	0.9	59%	0.9	59%	Roads
	KAM_TLI_2351	2.6	2.6	0.8	33%	0.8	33%	Roads
	KAM_TLI_2352	8.5	8.5	0.9	11%	0.9	11%	Roads
French Bar	KAM_TLI_1666	2.6	2.6	0.5	21%	0.5	21%	Roads

Landscape Unit	OGMA ID	Total OGMA Area (ha)	Total OGMA CE-CFLB Area (ha)	Incurred OGMA Area (ha)	Incurred OGMA %	Incurred CFLB Area (ha)	Incurred CFLB %	Disturbance Type
Hurley	KAM_TLI_666	2.9	2.9	0.4	13%	0.4	13%	Roads
	KAM_TLI_668	16.2	16.1	0.3	2%	0.3	2%	Power
				1.7	11%	1.7	11%	Roads
				2.0	13%	2.0	13%	Total Disturbance
	KAM_TLI_2106	7.3	7.3	1.0	14%	1.0	14%	Roads
	KAM_TLI_2187	0.8	0.8	0.2	23%	0.2	23%	Roads
Kwoiek	KAM_TLI_1471	0.9	0.9	0.1	15%	0.1	15%	Roads
Murray	KAM_TLI_1095	4.3	4.3	0.7	16%	0.7	16%	Forest Harvesting
	KAM_TLI_1354	2.5	2.4	0.8	31%	0.8	32%	Roads
	KAM_TLI_1405	42.6	42.6	14.7	34%	14.7	34%	Forest Harvesting
				0.8	2%	0.8	2%	Roads
				15.5	36%	15.5	36%	Total Disturbance
	KAM_TLI_1428	0.5	0.0	0.5	100%	0.0	0%	Forest Harvesting
Pavilion	KAM_TLI_199	8.5	8.5	1.3	15%	1.3	15%	Roads
				0.2	2%	0.2	2%	Right of Way
				1.5	17%	1.5	17%	Total Disturbance
	KAM_TLI_319	2.2	2.2	0.5	22%	0.5	22%	Roads
	KAM_TLI_673	2.9	2.8	0.3	9%	0.3	9%	Roads
				0.2	5%	0.2	5%	Right of Way
				0.4	14%	0.4	14%	Total Disturbance
	KAM_TLI_1908	750.8	745.9	1.4	0.2%	1.4	0.2%	Forest Harvesting
				0.9	0.1%	0.9	0.1%	Mining & Extraction
				3.4	0.5%	3.4	0.5%	Power
				9.7	1.3%	9.7	1.3%	Roads
				15.4	2.1%	15.4	2.1%	Total Disturbance
	KAM_TLI_1949	5.1	5.1	2.2	43%	2.2	43%	Forest Harvesting
				0.2	3%	0.2	3%	Roads
				2.4	47%	2.4	47%	Total Disturbance
	KAM_TLI_1954	0.7	0.7	0.1	21%	0.1	21%	Roads
	KAM_TLI_1988	2.2	2.1	0.7	30%	0.6	30%	Agriculture & Clearing
	KAM_TLI_2270	8.8	6.2	3.4	38%	1.3	21%	Agriculture & Clearing
				0.1	2%	0.01	0.1%	Right of Way
				3.5	40%	1.3	21%	Total Disturbance
Siska	KAM_TLI_2421	6.5	6.5	0.3	5%	0.3	5%	Power
				0.7	10%	0.7	10%	Roads
				1.0	15%	1.0	15%	Total Disturbance
Spruce Lake	KAM_TLI_1673	3.5	1.7	0.4	11%	0.3	20%	Roads

Landscape Unit	OGMA ID	Total OGMA Area (ha)	Total OGMA CE-CFLB Area (ha)	Incurred OGMA Area (ha)	Incurred OGMA %	Incurred CFLB Area (ha)	Incurred CFLB %	Disturbance Type
Texas Creek	KAM_TLI_933	4.1	0.6	3.4	84%	0.4	66%	Agriculture & Clearing
	KAM_TLI_1267	28.8	28.8	8.3	29%	8.3	29%	Agriculture & Clearing
				1.6	5%	1.6	5%	Roads
				0.3	1%	0.3	1%	Right of Way
				10.1	35%	10.1	35%	Total Disturbance
Watson Bar	KAM_TLI_160	0.4	0.4	0.1	39%	0.1	39%	Forest Harvesting
				0.01	2%	0.01	2%	Roads
				0.2	1%	0.2	1%	Total Disturbance
	KAM_TLI_213	21.0	21.0	2.1	10%	2.1	10%	Forest Harvesting
				0.1	1%	0.1	1%	Roads
				2.2	6%	2.2	6%	Total Disturbance
	KAM_TLI_228	9.6	9.6	1.2	12%	1.2	12%	Roads
	KAM_TLI_435	9.3	9.2	3.0	32%	3.0	33%	Agriculture & Clearing
	KAM_TLI_554	7.2	7.2	0.8	12%	0.8	12%	Roads
	KAM_TLI_1726	20.2	20.2	2.4	12%	2.4	12%	Forest Harvesting
				3.1	16%	3.1	16%	Roads
				5.5	27%	5.5	27%	Total Disturbance
Yalakom	KAM_TLI_178	6.7	6.7	0.9	14%	0.9	14%	Roads
	KAM_TLI_269	10.0	10.0	0.4	4%	0.4	4%	Forest Harvesting
				1.8	18%	1.8	18%	Roads
				2.2	22%	2.2	22%	Total Disturbance

Appendix 4 – Amount of Old Growth Forest in OGMAs

The following presents the current condition of CE-CFLB within non-legal OGMAs at the landscape (AU and OGMA (old growth forest within OGMA boundaries) level. Reporting is on how the OGMA itself is meeting the targets, not whether the AU is meeting the targets. Table 26 compares the amount of old growth forest (column D), the total CE-CFLB area of non-legal OGMAs (column E), and the amount of old growth forest within OGMAs (column F) relative to the target for old growth forest (column B) for all AUs with targets and established OGMAs (i.e., AUs with no old growth targets or without OGMAS are not included in the indicator).

The landscape level (column D and D/C) provides the amount of old growth forest within the CE-CFLB portion of each AU that contains OGMAs and indicates how much old growth forest is currently available as compared to the legal target. This provides context for the amount of old growth forest within and outside of OGMAs in the same BEC subzone/variant and represents the future potential of that LU-BEC to improve old growth forest retention, conservation, distribution, and management on the landscape.

> For example: in Bridge-Low-MSmw2 AU, there is currently 1,829.3 ha of old growth forest in the CE-CFLB which equates to 423% of old growth forest compared to targets. This translates to this AU having 4.23 times more old growth forest available than required by PNOGO.

The OGMA polygon level (column E and E/C) provides the total amount of CE-CFLB (ha) within the OGMA and compares that CE-CFLB area to the legal target. This explores the original intent of OGMAs to contain old growth forest and provides an indication of how OGMAs are meeting or exceeding targets if total CE-CFLB area is assumed to be old growth forest. Although the order (PNOGO) is to manage the total area of the OGMA polygon (which could include non-forested area), the amount of CE-CFLB (ha) in the OGMA reflects the current amount of forest within that OGMA available to meet targets. This provides context for evaluating if OGMA delineation captured enough area to meet the targets, regardless of forest age.

> For example: in the Bridge-Low-MSmw2 AU, there is currently 518.2 ha of CE-CFLB in OGMAs which equates to 120% of old growth forest compared to targets. This translates to these OGMAs having 1.2 times more forest available than required by PNOGO.

The old growth forest within OGMAs (column F and F/C) provides the actual amount of old growth forest within the OGMA and compares that CE-CFLB area to the legal target. It is important to note that if column F/C is 0% but there is CE-CFLB area and OGMAs associated with that LU-BEC, this means that there is currently no old growth forest within the OGMAs but may exist outside of the OGMA boundary. As a result, the OGMAs with 0% are currently not contributing to the old growth forest targets.

> For example: in the Bridge-Low-MSmw2 AU, there is 514.0 ha of old growth forest in the CE-CFLB within OGMAs which equates to 119% of the target met with old growth forest. This translates to these OGMAs having 1.19 times more old growth forest available than required by PNOGO.

By reporting on both the CE-CFLB area in OGMAs (column E and E/C) and the amount of old in OGMAs (column F and F/C), the results provide a clearer depiction of current condition and old growth management in LU-BECs (AUs) with OGMAs and where there are opportunities for improvements in the future at the landscape level (column D and D/C).

In the Lillooet TSA, there are non-legal OGMAs established that span across multiple BEO designations within an LU-BEC unit. As a result, those AUs are reported separately by BEO. For example, the Kwoiek LU spans multiple BEO designations (Intermediate and High) which results in multiple targets established for that LU-BEC. These have been reported separately in Table 26.

Table 26. *Total Area of Old Growth Forest within Non-Legal Old Growth Management Areas (OGMAs) Compared to Legal Targets by Assessment Unit (AU) in the Lillooet Timber Supply Area (TSA).*

			Old Targets		Current Amount and Percents of Old					
COLUMN CALCULATIONS:		A	B	A*B=C	D	D/C	E	E/C	F	F/C
Landscape Unit, BEO	BEC Variant	Total BEC CE-CFLB (ha)	Target Old (%)	Target Old CE-CFLB Area (ha)	CE-CFLB Area of Old (ha)	CE-CFLB Area of Old (% of Target)	CE-CFLB Area in OGMA (ha)	CE-CFLB Area in OGMA (% of Target)	CE-CFLB Area of Old in OGMA (ha)	CE-CFLB Area of Old in OGMA (% of Target)
Bridge, Low	ESSFdv1	2,758.0	14%	386.1	1,946.9	504%	349.0	90%	348.6	90%
	ESSFdv2	3,493.4	14%	489.1	2,619.8	536%	497.8	102%	497.8	102%
	ESSFdvw	569.5	14%	79.7	522.0	655%	57.5	72%	57.5	72%
	ESSFmw2	1,123.8	9%	101.1	535.6	530%	129.1	128%	125.3	124%
	IDFdc	2,450.8	13%	318.6	289.9	91%	305.0	96%	167.8	53%
	IDFxc	0.3	13%	0.04	-	0%	-	0%	-	0%
	MSdc1	3,342.8	14%	468.0	2,458.3	525%	405.0	87%	397.8	85%
	MSdc3	650.4	14%	91.1	531.3	584%	124.3	136%	124.3	136%
	MSmw2	3,090.9	14%	432.7	1,829.3	423%	518.2	120%	514.0	119%
Carpenter Lake North, Low	ESSFdv2	5,772.3	14%	808.1	3,611.4	447%	619.4	77%	613.9	76%
	ESSFdvw	668.1	14%	93.5	560.9	600%	98.5	105%	97.4	104%
	IDFdc	19,032.8	13%	2,474.3	307.5	12%	2,210.3	89%	127.3	5%
	IDFxc	4,419.5	13%	574.5	98.6	17%	605.8	105%	39.1	7%
	MSdc3	4,419.6	14%	618.7	2,177.4	352%	596.2	96%	463.5	75%
Carpenter Lake South, High	ESSFdv1	2,757.9	21%	579.2	2,446.5	422%	415.4	72%	415.3	72%
	ESSFdv2	60.0	21%	12.6	56.2	446%	18.9	150%	18.9	150%
	ESSFdvw	646.6	21%	135.8	558.3	411%	136.3	100%	136.3	100%
	IDFdc	3,952.0	19%	750.9	318.5	42%	660.9	88%	161.0	21%
	IDFxc	577.4	19%	109.7	27.2	25%	115.0	105%	21.2	19%
	MSdc1	1,765.1	21%	370.7	1,470.9	397%	297.8	80%	290.5	78%
	MSdc3	41.0	21%	8.6	21.1	245%	8.9	103%	8.9	103%
Carpenter Lake South, Low	ESSFdv1	1,806.2	14%	252.9	1,294.1	512%	180.5	71%	179.4	71%
	ESSFdvw	420.2	14%	58.8	369.1	627%	26.2	45%	26.2	45%
	IDFdc	2,702.7	13%	351.3	4.2	1%	343.6	98%	4.2	1%
	MSdc1	1,182.2	14%	165.5	706.5	427%	180.0	109%	165.3	100%
Connel Creek, High	ESSFdvw	32.1	21%	6.7	16.9	251%	0.0	1%	0.0	1%
	ESSFmw2	2,148.7	13%	279.3	579.7	208%	248.6	89%	196.6	70%
	ESSFmww	482.0	13%	62.7	181.0	289%	57.5	92%	57.5	92%
	IDFdc	800.6	19%	152.1	135.2	89%	204.9	135%	119.4	78%
	IDFww1	1,209.0	19%	229.7	209.9	91%	180.1	78%	116.2	51%
	MSmw2	739.5	21%	155.3	435.0	280%	145.9	94%	142.6	92%

			Old Targets		Current Amount and Percents of Old					
COLUMN CALCULATIONS:		A	B	A*B=C	D	D/C	E	E/C	F	F/C
Landscape Unit, BEO	BEC Variant	Total BEC CE-CFLB (ha)	Target Old (%)	Target Old CE-CFLB Area (ha)	CE-CFLB Area of Old (ha)	CE-CFLB Area of Old (% of Target)	CE-CFLB Area in OGMA (ha)	CE-CFLB Area in OGMA (% of Target)	CE-CFLB Area of Old in OGMA (ha)	CE-CFLB Area of Old in OGMA (% of Target)
Connel Creek, Low	ESSFdv1	264.3	14%	37.0	75.6	204%	31.7	86%	31.1	84%
	ESSFdv2	401.9	14%	56.3	313.0	556%	32.4	58%	32.4	58%
	ESSFdvw	239.8	14%	33.6	44.0	131%	5.7	17%	5.7	17%
	ESSFmw2	895.6	9%	80.6	11.2	14%	41.1	51%	7.1	9%
	IDFdc	2,324.1	13%	302.1	195.9	65%	269.0	89%	163.0	54%
	IDFww1	1,030.0	13%	133.9	213.3	159%	120.8	90%	107.7	80%
	IDFxc	1,445.2	13%	187.9	311.9	166%	162.5	86%	162.5	86%
	MSdc1	358.3	14%	50.2	189.9	379%	31.1	62%	29.1	58%
	MSdc3	80.9	14%	11.3	79.5	702%	-	0%	-	0%
	MSmw2	806.6	14%	112.9	384.1	340%	47.4	42%	47.4	42%
	MSxk3	617.8	14%	86.5	471.4	545%	135.5	157%	135.5	157%
Duffey Lake, High	CWHms1	1,223.4	13%	159.0	394.3	248%	172.5	108%	165.9	104%
	ESSFdv1	9,908.5	21%	2,080.8	6,982.2	336%	1,559.6	75%	1,549.3	74%
	ESSFdvw	1,500.4	21%	315.1	1,359.5	431%	251.0	80%	248.4	79%
	ESSFmw2	6,057.9	13%	787.5	2,561.4	325%	856.9	109%	820.5	104%
	ESSFmww	728.1	13%	94.7	374.3	395%	132.4	140%	132.4	140%
	IDFdc	4,172.9	19%	792.8	227.1	29%	669.9	84%	207.4	26%
	IDFxc	2,567.1	19%	487.8	287.7	59%	557.5	114%	236.5	48%
	MSdc1	4,522.2	21%	949.7	2,838.0	299%	807.7	85%	803.8	85%
	MSmw2	1,720.8	21%	361.4	903.1	250%	451.4	125%	438.9	121%
French Bar, Int.	ESSFxv2	12,380.4	9%	1,114.2	197.8	18%	1,136.4	102%	126.0	11%
	ESSFxvw	823.1	9%	74.1	55.8	75%	1.4	2%	0.0	0%
	IDFdk3	5,212.4	13%	677.6	288.2	43%	509.1	75%	95.1	14%
	IDFxw	2,715.7	13%	353.0	196.6	56%	291.8	83%	34.2	10%
	MSxk3	3,164.4	14%	443.0	922.5	208%	321.1	72%	192.9	44%
	MSxv	7,564.2	14%	1,059.0	1397.2	132%	757.2	72%	436.3	41%
Gun, Low	ESSFdv2	7,524.0	14%	1,053.4	4,835.1	459%	1,022.3	97%	1,022.1	97%
	ESSFdvw	1,019.8	14%	142.8	810.7	568%	158.9	111%	158.9	111%
	IDFdc	1,358.3	13%	176.6	35.2	20%	186.2	105%	35.2	20%
	MSdc3	1,474.4	14%	206.4	389.6	189%	201.7	98%	201.7	98%

			Old Targets		Current Amount and Percents of Old					
COLUMN CALCULATIONS:		A	B	A*B=C	D	D/C	E	E/C	F	F/C
Landscape Unit, BEO	BEC Variant	Total BEC CE-CFLB (ha)	Target Old (%)	Target Old CE-CFLB Area (ha)	CE-CFLB Area of Old (ha)	CE-CFLB Area of Old (% of Target)	CE-CFLB Area in OGMA (ha)	CE-CFLB Area in OGMA (% of Target)	CE-CFLB Area of Old in OGMA (ha)	CE-CFLB Area of Old in OGMA (% of Target)
Hurley, Int.	ESSFdv1	4,487.2	14%	628.2	3,114.4	496%	642.5	102%	621.5	99%
	ESSFdvw	725.0	14%	101.5	652.6	643%	42.5	42%	35.2	35%
	ESSFmw2	6,691.6	9%	602.2	2,974.9	494%	612.0	102%	596.8	99%
	ESSFmww	804.5	9%	72.4	271.2	375%	59.4	82%	55.3	76%
	IDFdc	1,528.7	13%	198.7	42.6	21%	190.5	96%	42.6	21%
	IDFxc	8.4	13%	1.1	-	0%	-	0%	-	0%
	MSdc1	6,686.1	14%	936.1	2,221.6	237%	959.5	102%	805.4	86%
	MSmw2	2,093.5	14%	293.1	701.7	239%	243.0	83%	231.4	79%
Kwoiek, High	ESSFdv1	149.7	21%	31.4	63.0	200%	0.7	2%	0.7	2%
	ESSFdvw	116.7	21%	24.5	116.7	476%	28.5	116%	28.5	116%
	ESSFmw2	4585.4	13%	596.1	714.4	120%	519.0	87%	423.4	71%
	ESSFmww	778.0	13%	101.1	158.4	157%	95.1	94%	78.2	77%
	IDFww1	1441.1	19%	273.8	108.7	40%	256.2	94%	78.4	29%
	MSdc1	232.8	21%	48.9	138.6	284%	75.8	155%	71.6	146%
	MSmw2	2579.8	21%	541.8	1487.0	274%	516.7	95%	462.0	85%
Kwoiek, Int.	ESSFdv1	801.1	14%	112.1	735.2	656%	113.8	102%	113.8	102%
	ESSFdvw	51.6	14%	7.2	51.4	711%	10.4	144%	10.4	144%
	ESSFmw2	846.5	9%	76.2	142.0	186%	73.8	97%	41.5	54%
	ESSFmww	211.0	9%	19.0	27.5	145%	15.5	82%	9.3	49%
	IDFdc	1941.0	13%	252.3	235.7	93%	253.5	100%	123.5	49%
	IDFww1	1915.9	13%	249.1	54.7	22%	229.9	92%	31.9	13%
	IDFxc	1200.8	13%	156.1	69.9	45%	127.2	81%	40.8	26%
	MSdc1	927.0	14%	129.8	602.7	464%	105.3	81%	104.8	81%
	MSmw2	1112.3	14%	155.7	332.1	213%	133.0	85%	129.5	83%
	PPxh2	175.5	13%	22.8	-	0%	20.8	91%	-	0%
Lost Creek, High	ESSFdv1	3,192.5	21%	670.4	2,755.1	411%	597.6	89%	590.1	88%
	ESSFdvw	267.0	21%	56.1	237.1	423%	33.4	60%	33.4	60%
	IDFdc	2,063.6	19%	392.1	177.2	45%	408.0	104%	108.4	28%
	IDFww1	1,477.6	19%	280.7	473.6	169%	613.6	219%	466.0	166%
	IDFxc	2,592.5	19%	492.6	212.8	43%	193.6	39%	74.1	15%
	MSdc1	736.6	21%	154.7	423.6	274%	186.0	120%	183.3	119%
	MSmw2	1,174.2	21%	246.6	1,021.3	414%	193.1	78%	193.1	78%

			Old Targets		Current Amount and Percents of Old					
COLUMN CALCULATIONS:		A	B	A*B=C	D	D/C	E	E/C	F	F/C
Landscape Unit, BEO	BEC Variant	Total BEC CE-CFLB (ha)	Target Old (%)	Target Old CE-CFLB Area (ha)	CE-CFLB Area of Old (ha)	CE-CFLB Area of Old (% of Target)	CE-CFLB Area in OGMA (ha)	CE-CFLB Area in OGMA (% of Target)	CE-CFLB Area of Old in OGMA (ha)	CE-CFLB Area of Old in OGMA (% of Target)
Murray, Low	ESSFdc2	884.4	14%	123.8	709.1	573%	159.3	129%	144.9	117%
	ESSFxc2	1291.8	14%	180.8	752.1	416%	170.8	94%	135.7	75%
	ESSFxcw	215.2	14%	30.1	71.8	238%	31.4	104%	21.6	72%
	IDFdk1	19072.7	13%	2,479.5	950.3	38%	2,507.2	101%	415.1	17%
	IDFww1	348.6	13%	45.3	-	0%	54.7	121%	-	0%
	IDFxh2	15099.3	13%	1,962.9	813.0	41%	1,823.1	93%	343.1	17%
	MSdm2	6027.7	14%	843.9	2796.9	331%	775.0	92%	599.4	71%
	MSxk3	9053.4	14%	1,267.5	4608.4	364%	1,255.6	99%	1,006.1	79%
	PPxh2	8403.3	13%	1,092.4	751.6	69%	922.3	84%	281.2	26%
Pavilion, Int.	ESSFxc3	3,555.8	14%	497.8	1,009.1	203%	557.5	112%	150.7	30%
	ESSFxcw	549.7	14%	77.0	248.0	322%	73.5	96%	28.3	37%
	IDFdk1	12,317.3	13%	1,601.3	362.6	23%	1,345.6	84%	96.6	6%
	IDFdk3	2,403.1	13%	312.4	-	0%	341.3	109%	-	0%
	IDFxh2	12,216.1	13%	1,588.1	849.0	53%	1,469.2	93%	253.9	16%
	IDFxw	510.5	13%	66.4	-	0%	41.6	63%	-	0%
	MSxk3	12,525.8	14%	1,753.6	4,176.2	238%	1,416.4	81%	509.6	29%
	PPxh2	3,171.2	13%	412.2	163.3	40%	271.7	66%	7.4	2%
Siska, Int.	ESSFdc2	5,232.8	14%	732.6	2,925.0	399%	545.1	74%	521.9	71%
	ESSFdcw	204.4	9%	18.4	10.0	54%	23.8	129%	7.8	42%
	ESSFmw1	19.1	9%	1.7	-	0%	-	0%	-	0%
	ESSFmww	17.4	9%	1.6	16.0	1018%	2.8	180%	2.8	180%
	IDFdk1	238.5	13%	31.0	22.3	72%	5.8	19%	5.5	18%
	IDFdk2	6,417.5	13%	834.3	734.9	88%	814.5	98%	447.7	54%
	IDFww1	360.1	13%	46.8	-	0%	26.7	57%	-	0%
	IDFxc	6.0	13%	0.8	-	0%	-	0%	-	0%
	IDFxh2	6,815.4	13%	886.0	1,296.6	146%	790.5	89%	562.6	64%
	MSdm2	5,446.8	14%	762.5	1,868.6	245%	507.5	67%	376.2	49%
	PPxh2	1,163.9	13%	151.3	131.5	87%	122.2	81%	35.0	23%
Spruce Lake, Int.	ESSFdv2	6,175.1	14%	864.5	4,324.8	500%	823.5	95%	813.3	94%
	ESSFdvw	616.5	14%	86.3	465.9	540%	22.4	26%	20.9	24%
	ESSFxc3	11,627.2	14%	1,627.8	6,539.1	402%	1,492.8	92%	1,463.5	90%
	ESSFxcw	1,665.0	14%	233.1	733.6	315%	182.4	78%	156.4	67%
	IDFdc	1,086.3	13%	141.2	27.0	19%	137.1	97%	19.6	14%
	MSdc3	9,995.9	14%	1,399.4	4,532.9	324%	1,364.8	98%	1,244.0	89%

			Old Targets		Current Amount and Percents of Old					
COLUMN CALCULATIONS:		A	B	A*B=C	D	D/C	E	E/C	F	F/C
Landscape Unit, BEO	BEC Variant	Total BEC CE-CFLB (ha)	Target Old (%)	Target Old CE-CFLB Area (ha)	CE-CFLB Area of Old (ha)	CE-CFLB Area of Old (% of Target)	CE-CFLB Area in OGMA (ha)	CE-CFLB Area in OGMA (% of Target)	CE-CFLB Area of Old in OGMA (ha)	CE-CFLB Area of Old in OGMA (% of Target)
Texas Creek, Int.	ESSFdv1	6,585.8	14%	922.0	4,325.4	469%	696.1	75%	690.2	75%
	ESSFdvw	835.7	14%	117.0	627.9	537%	114.5	98%	114.5	98%
	IDFdc	3,967.5	13%	515.8	459.7	89%	422.8	82%	159.5	31%
	IDFxc	4,566.9	13%	593.7	362.0	61%	581.7	98%	117.4	20%
	MSdc1	2598.2	14%	363.7	1,502.7	413%	310.2	85%	304.6	84%
	PPxh2	1,379.5	13%	179.3	49.1	27%	125.5	70%	15.8	9%
Watson Bar, Low	ESSFdv2	2,088.4	14%	292.4	1,574.4	538%	262.0	90%	257.2	88%
	ESSFdvw	45.6	14%	6.4	45.6	714%	13.6	212%	13.6	212%
	ESSFxc3	12,686.1	14%	1,776.0	5,561.8	313%	1,461.8	82%	1,283.1	72%
	ESSFxcw	175.6	14%	24.6	89.9	366%	12.9	52%	8.8	36%
	ESSFxv2	3,061.8	9%	275.6	57.6	21%	258.4	94%	0.2	0%
	ESSFxvw	443.3	9%	39.9	14.2	36%	41.5	104%	-	0%
	IDFdc	3,843.7	13%	499.7	330.8	66%	558.6	112%	229.5	46%
	IDFdk1	13,871.1	13%	1,803.2	880.8	49%	1,548.2	86%	432.5	24%
	IDFdk3	2,321.1	13%	301.7	38.3	13%	391.8	130%	36.6	12%
	IDFxc	8,377.6	13%	1,089.1	901.0	83%	851.8	78%	359.7	33%
	IDFxw	3,098.1	13%	402.8	287.9	71%	265.0	66%	93.2	23%
	MSdc3	966.4	14%	135.3	576.9	426%	205.0	151%	164.9	122%
	MSxk3	11,156.2	14%	1,561.9	3,316.0	212%	1,423.1	91%	1,252.2	80%
	PPxh2	1,325.6	13%	172.3	140.3	81%	146.0	85%	57.0	33%
Yalakom, Int.	ESSFdv2	6,479.7	14%	907.2	4,957.1	546%	732.2	81%	725.9	80%
	ESSFdvw	407.7	14%	57.1	393.9	690%	12.8	22%	12.8	22%
	ESSFxc3	4,133.9	14%	578.7	3,267.2	565%	654.8	113%	654.5	113%
	ESSFxcw	108.5	14%	15.2	103.3	680%	21.2	140%	21.2	140%
	ESSFxv2	9,078.8	9%	817.1	684.9	84%	1,222.3	150%	186.2	23%
	ESSFxvw	1,405.6	9%	126.5	213.3	169%	302.1	239%	80.4	64%
	IDFdc	2,681.1	13%	348.5	100.2	29%	370.4	106%	56.0	16%
	IDFdk1	11,285.7	13%	1,467.1	1,306.2	89%	1,414.6	96%	370.8	25%
	IDFxc	3,625.9	13%	471.4	422.8	90%	627.6	133%	315.3	67%
	MSdc3	3,029.2	14%	424.1	1,391.7	328%	376.6	89%	338.5	80%
	MSxk3	5,686.4	14%	796.1	3,322.5	417%	906.2	114%	901.5	113%
	PPxh2	132.9	13%	17.3	50.0	290%	6.8	39%	2.6	15%
TOTAL		**506,997**		**70,216**	**153,229**	**218%**	**64,625**	**92%**	**37,973**	**54%**

Ministry of
Water, Land and
Resource Stewardship

CEF Cumulative
Effects
Framework