

BOUNDARY TIMBER SUPPLY AREA AND TREE FARM LICENSE 8 OLD GROWTH MANAGEMENT AREAS REPORT

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1. Introduction

Old growth forest planning was initiated in the 1990's by the provincial government with the introduction of *Forest Practices Code of British Columbia Act*. A significant source of guidance for biodiversity planning including that related to old seral forests was the Biodiversity Guidebook (Ministry of Forests 1995). This guidance was considered in the development of the Kootenay Boundary Land Use Plan Implementation Strategy (Kootenay Inter-Agency Committee 1997) report which was endorsed by government in 2001. This document defined landscape units, biodiversity emphasis options, mature plus old and old seral targets by biogeoclimatic subzone variant and natural disturbance type. These are considered key information needed for biodiversity planning. In 1999, a biodiversity planning initiative focussing on the establishment of legal Old Growth Management Areas (OGMA's) was launched jointly by the Ministry of Forests and the Ministry of Environment. This initiative was supported by the Landscape Unit Planning Guide (Ministry of Forests and Ministry of Environment Lands and Parks 1999). This document provided policy and procedures for identifying OGMA's. This guide has been used extensively in defining data and map files used in identifying required seral targets; as a source of information for procedures used to identify seral targets; and a source of information and guidance for work completed through this report. Formal planning to identify spatial OGMA's in the Boundary area was initiated by the Ministry of Sustainable Resource Management (now called the Integrated Land Management Bureau (ILMB) of the Ministry of Agriculture and Lands) in 2001.

In 2001, the first Kootenay Boundary Higher Level Plan Order (KBHLPO) (Ministry of Sustainable Resource Management, 2002) was brought into force. This order included an objective with requirements for maintaining old seral forests. This order was replaced in 2002 but the requirements for maintaining old seral forests were not changed significantly. This order has been a primary consideration in identifying spatial OGMA's. OGMA's are also referred to as seral patches throughout the body of this report. In 2005, the *Forest and Range Practices Act* (FRPA) was proclaimed replacing most of the former *Forest Practices Code of British Columbia Act*. This was a major change in government direction and had implications with respect to how legal objectives are considered in the approval of mandatory forest plans associated with legislation. It also meant that the guidance from Forest Practice Code used for identifying spatial OGMA's needed to be considered in terms of the FRPA legislation. In 2006, ILMB decided not to move forward to legalize spatial OGMA's in the Southern Interior Region as it was felt that existing legal objectives provided were adequate and legalization of spatial OGMA's was not required at this time. It was also decided that the work completed by ILMB in identifying spatial OGMA's would be made available to forest licensees and BC Timber Sales (BCTS) as the information that could be useful to them in preparing results and strategies or supporting information for forest stewardship plans required under FRPA.

The purpose of this report is to identify spatial OGMA's, considering the legal direction provided through the KBHLPO and the methodology outlined in the document. This report also documents information, considerations and other factors considered in the methodology used in this report. Recommendations regarding the use of this information are provided.

The OGMA's identified in this report represent one possible option for spatially identifying seral targets outlined in Objective 2 of the KBHLPO. This report is not legally binding direction from government with respect to how forest licensees address Objective 2 (Old and Mature Forest) of the KBHLPO in their

forest stewardship plans. This report is intended for information only and those who use this information need to evaluate it to ensure that it is appropriate for their purposes.

2. Old Growth Management Area Identification Methodology

The KBHLPO and the LUPG were key sources of information and procedures that were used to develop in developing the methodology used in identifying spatial seral patches. The KBHLPO prescriptively outlines legal seral requirements. These aspatial requirements are used in this report as a basis for identifying spatial seral patches to the levels required under the KBHLPO. Although the LUPG is considered to be guidance associated with the *Forest Practices Code*, it is still felt to be relevant for identifying spatial seral patches under the *Forest and Range Practices Act* which has substantially replaced the FPC. The procedures for data preparation in the LUPG have been widely used in government. The KBHLPO was also developed using information that was prepared considering the LUPG and therefore continued use of the LUPG in work related to KBHLPO objective is considered appropriate. Part 2 of the KBHLPO also indicates that definitions, processes and procedures in the LUPG apply unless otherwise noted in the KBHLPO. The guidance provided in the LUPG was also developed considering the impacts of implementing biodiversity and keeping those impacts to an acceptable level (MOF and MELP 1999). Section 9 of the Forest Planning and Practices regulation (Province of BC 2005) of the *Forest Range and Practices Act* states “The objective set by government for wildlife and biodiversity at the landscape level is, without unduly reducing the supply of timber from British Columbia’s forests and to the extent practicable, to design areas on which timber harvesting is to be carried out that resemble, both spatially and temporally, the patterns of natural disturbance that occur within the landscape.” The use of the LUPG in identifying spatial OGMA’s is felt by the author to be consistent with this regulation, since it was intended to keep timber supply impacts to levels acceptable to government.

The following documents the methodology considered in identifying spatial OGMA’s for the Boundary Timber Supply Area (TSA).

i) Kootenay Boundary Higher Level Plan Direction

The KBHLPO (MSRM, 2002) provides legal direction for identifying old and mature seral forests. The order identifies biodiversity emphasis options for the Boundary TSA and TFL 8 area and also provides targets for retention of seral types by landscape units and biogeoclimatic subzone variants. The following tables are taken from the order identify seral requirements by biogeoclimatic units and seral types and biodiversity option.

Table 2.1. Seral stage distribution for Natural Disturbance Type (NDT) 1 (percentage of forest area within the biogeoclimatic unit of each landscape unit)

Biogeoclimatic Unit	Seral Stage					
	Mature and Old			Old		
	L ^b	I ^c	H ^d	L ^{b,e}	I ^c	H ^d
ICH ^f	>17	>34	>51	>4.3	>13	>19
ESSF ^g	>19	>36	>54	>6.3	>19	>28

**Table 2.2. Seral stage distribution for Natural Disturbance Type (NDT) 2
(percentage of forest area within the biogeoclimatic unit of each landscape unit)**

Biogeoclimatic Unit	Seral Stage					
	Mature and Old			Old		
	L ^b	I ^c	H ^d	L ^{b,e}	I ^c	H ^d
ICH ^f	>15	>31	>46	>3	>9	>13
ESSF ^g	>14	>28	>42	>3	>9	>13

b L =Low Biodiversity Emphasis

c I = Intermediate Biodiversity Emphasis

d H=High Biodiversity Emphasis

e Tables 2.1 to 2.4 show the targets employing 2/3 draw-down for the “Old” seral stage component in low biodiversity emphasis. As per the Landscape Unit Planning Guidebook, a recruitment strategy must be developed that describes how to meet the full target. The full target will be achieved by the end of the third rotation.

f ICH = Interior Cedar Hemlock

g ESSF = Englemann Spruce – Subalpine Fir

h MS = Montane Spruce

i IDF = Interior Douglas Fir

J PP = Ponderosa Pine

**Table 2.3. Seral stage distribution for Natural Disturbance Type (NDT) 3
(percentage of forest area within the biogeoclimatic unit of each landscape unit)**

Biogeoclimatic Unit	Seral Stage					
	Mature and Old			Old		
	L ^b	I ^c	H ^d	L ^{b,e}	I ^c	H ^d
MS ^h	>14	>26	>39	>4.7	>14	>21
ESSF ^g	>14	>23	>34	>4.7	>14	>21
ICH ^f	>14	>23	>34	>4.7	>14	>21

**Table 2.4. Seral stage distribution for Natural Disturbance Type (NDT) 4
(percentage of forest area within the biogeoclimatic unit of each landscape unit)**

Biogeoclimatic Unit	Seral Stage					
	Mature and Old			Old		
	L ^b	I ^c	H ^d	L ^{b,e}	I ^c	H ^d
ICH ^f	>17	>34	>51	>4.3	>13	>19
IDF ⁱ	>17	>34	>51	>4.3	>13	>19
PP ^j	>17	>34	>51	>4.3	>13	>19

This order (KBHLPO 2002) also defines what ages or other attributes constitute mature and old seral types. Direction is also provided on recruitment of old growth where subject areas are in deficit of retention requirements.

Objective 1 (Biodiversity Emphasis) defines the biodiversity emphasis applicable by landscape unit. Section 3 of Objective 2 (Old and Mature Forest) indicates OGMA’s will be maintained at the subzone variant level within defined landscape units. These factors are the basis for establishing OGMA targets.

Section (5) of Objective 2 indicates that where recruitment is required that areas chosen should try to ensure targets are achieved in the shortest time frame. Where deficits in old forest were encountered consideration was given to locating stands in the oldest available stands.

Footnote k of Objective 2 of the KBHLPO states “Where a registered professional forester determines that a forest stand has sufficient biological value to be a mature or old considering the stands age, successional status, presence of old growth attributes, size of stand (ha), the amount of human impact, dispersion/connectivity of the stand and rarity of the stand; that stand may be used in meeting the targets as opposed to solely using age.” The author has considered this in the methodology used to identify spatial OGMA’s.

Under Objective 5 (Grizzly Bear and Connectivity Corridors), old growth targets are suppose to be preferentially located in connectivity and grizzly bear habitat areas. This was done in the OGMA identification process for connectivity areas but for grizzly bear areas as maps have yet to be made available. OGMA areas with higher value for biodiversity were chosen over with lower values in connectivity areas. Section (6) of objective 2 of the KBHLPO states: “Old targets should be used to address this objective unless other conservation values such as protection of rare or under represented old growth forests would be adversely affected. Protected areas must be used first to reduce the old target where available within the biogeoclimatic unit.”

Objective 8 (Fire Maintained Ecosystems) indicates that open forest may be used to meet seral targets. In completing the process for identifying OGMA’s areas within Natural Disturbance Type (NDT) 4, forests that were inventoried as Non Productive (NP) forest were considered for inclusion as OGMA’s as many of these stands meet the definition of open forest. Open forest was defined as stands with low stocking 76 to 400 stems and also Crown closure less than 40 % (Kootenay Inter-Agency Committee 1997). Where overview flights were conducted a subjective call was made in terms of the stocking and crown closure as well as the presence of suitable trees with old growth characteristics. OGMA’s identified as NP were also identified using orthophotoes considering tree stocking and crown closure from the photos. Where stands were included as OGMA’s the area of OGMA was considered to be Contributing Forest Land Base (CFLB) and seral targets were adjusted based on the increased CFLB.

ii) Landscape Unit Planning Guide Information

The Landscape Unit Planning Guide was published in March of 1999. This guide was intended to consolidate direction, guidance and information regarding landscape unit planning under the Forest Practices Code. It was also intended to provide procedures and methodology for implementing priority old growth planning. The transmittal letter (Ministry of Forests and Ministry of Environment, Lands and Parks 1999) that accompanied the guide included a section regarding timber supply impacts and operating costs. This section indicated that biodiversity objective impacts on provincial timber supply were not permitted to exceed 4.1% in the short term and 4.3% in the long term. This section of the letter also indicated that consideration should be given to minimize industry costs while maintaining biodiversity values in developing landscape unit objectives. The LUPG also indicates that the guide tries to ensure that biodiversity conservation is within the timber supply impact levels set by government. This has been interpreted by the author to mean that if the guide is utilized that timber impacts will be within levels acceptable to government. The LUPG was a key source of information, guidance and procedures used in this report to spatial identify seral targets.

The data files used for identifying OGMA's was prepared by the Land Information Management section of ILMB considering direction from Chapter 2 of the LUPG. Through this process the CFLB is identified. The CFLB is used to calculate seral targets for subject areas. Targets are identified by multiplying the seral target for a specific areas defined by Landscape Unit, biogeoclimatic subzone variant and biodiversity emphasis.

Chapter 3 of the LUPG was considered in delineating OGMA's. Both biodiversity and operational considerations are listed in the chapter. The following are key considerations from the LUPG (MOF and MOELP 1999) used in this report in the identification of seral targets:

- (a) Old growth representation must be calculated at the variant level only;
- (b) Old growth targets must be met using non-contributing (non timber harvesting land base) areas
- (c) OGMA's should be delineated to maximize their value to biodiversity conservation considering rarity of the site, interior condition of OGMA and connectivity value;
- (d) Where there is more than one possible location for an OGMA choose the location that will minimize the impacts on the timber resource;
- (e) Consider using older mature seral forest stands where larger patch size or better ecosystem representation can be obtained;
- (f) Avoid locating OGMA's where main haul roads exist or are anticipated to exist;
- (g) Where there is a deficit old growth to meet the seral targets, develop a recruitment strategy to meet the targets in the shortest possible time frame. Recruitment should be from non-contributing areas where conservation values are similar;
- (h) Where OGMA's need to be located in the timber harvesting land base they should be located in constrained areas where conservation values are equal or better;
- (i) Locating OGMA's in existing cutblocks, approved blocks and Category 'A' blocks will be strongly avoided and;
- (j) Suitable old seral areas located within Parks and protected areas can be used to reduce seral targets for the unit that the seral targets apply to. Seral targets can not be located within Parks or protected areas.

Chapter 3 (MOF and MOELP 1999) also indicates that timber supply impacts are expected to be within government's expectations if the procedures in this chapter are used.

iii) OGMA Identification Process and History

Work on identification of OGMA's in the former Boundary Forest District began in 1998. Once the LUPG came out in 1999, work began on developing data and mapping information for working on OGMA's. Geomedia software was initially used to identify potential OGMA's. Initially landscape unit B04 and B10 were worked on. The maps and data were queried to find 150 % of the seral targets by biogeoclimatic subzone variant and biodiversity emphasis option. The oldest available stands were chosen even if this required recruiting into younger seral classes (mature or mid seral). As per the KBHLPO, preference was also given to locating OGMA's in connectivity corridors. In the case of LU B04, the entire landscape unit is within a connectivity corridor so no preferential location of OGMA's was required. A couple of different methods were tried for rating potential OGMA areas. The first involved rating areas based on individual forest cover polygons and the second method involved an initial grouping of forest cover units into patches for rating. The former method was adapted after helicopter overview flights were conducted to rate areas identified. Rating individual polygons was found to be very onerous as it was often hard to tell where one polygon ended and another began.

The helicopter overview process was set up so that representatives from the Ministry of Environment, Pope and Talbot (major licensee in the Boundary area) Ministry of Forest's staff (Planning and Small Business and Timber) go be involved in the overview flights. Old growth attributes for stands reviewed were assessed considering important criteria (Holt 2000). An old growth attribute data collection form was developed which was used to rate potential OGMA areas (see Appendix C). The form included fields for identifying or rating the following factors:

- Patch number,
- Large tree abundance,
- Tree species of large trees
- Abundance of veteran trees, snags, broken tops and dead tops,
- Canopy gaps
- Presence of lichen,
- Presence of Coarse woody debris and,
- Ratings between 0 and 5 with 0 having no value for old growth and 5 being old growth forests.

In rating the patches tree size abundance of snags, vets, and dead and broken trees and the overall rating for the patches were generally the main areas that were rated during flights. It should be noted that there was no helicopter reconnaissance of Landscape Unit B11. In other LU's given budget and time constraints not all patches we reviewed aurally. In the original data files areas comments are included regarding whether the stand was rated from flights or not. Funding for helicopter flights was made available from Forest Renewal BC. Flights were conducted between 1999 and 2002.

Information gathered from aerial flights was compiled and added to mapping data bases. Potential OGMA patches that had not been flown were given rating based on their age class attributes and other factors such as planners experience rating similar stands on aerial flights and local experience. Some field work was completed in landscape unit B01 and was also used to rate areas for OGMA's. This included some partial harvested areas. This information was also added to the mapping data base. In the case of landscape unit B11 this was not done as no flights were completed in this area. A different methodology for identifying potential OGMA described below was used.

New Arcview coverages were made for all landscape units except B11. These new coverages were built using Timber Supply Review 2 files with update inventory information, potential OGMA information and available Forest Development Plan (FDP) information. Files were constructed by Land Information Management of ILMB considering Chapter 2 of the LUPG. Once the coverages were available ILMB planners reviewed the ArcView coverages using Arcview 3.2 software, IRS Satellite images (2000) and Ortophotos (1998). As well copies of updated licensee and BC Timber Sales (BCTS) FDP's were also considered. Seral targets were established for each individual landscape unit/ biogeoclimatic subzone variant/ biodiversity emphasis option/ operability type combination. Originally these targets had been established through the Nelson Forest Region office and were called the Higher Level Plan Order Monitoring Reports. Later in the process old seral targets were established by ILMB or its predecessor agency (Ministry of Sustainable Resource Management, Land Information Management section) from new updated coverages which were developed during work identifying OGMA's. (Seral targets were not established for natural disturbance 5 areas as no targets were established through the higher level plan.)

Data queries were made to the Arcview files to help identify OGMA's to the 100% old seral target level. Basically areas with the highest rating were chosen. Preference was given to choosing OGMA's outside the Timber Harvesting Land Base (THLB) wherever possible. Where areas had equal rating within the THLB and the biodiversity values were similar potential OGMA's would be located in constrained areas. The Draft OGMA Planning SOP was considered in identifying potential OGMA's (see Appendix A). This document was never finalized as a regional Standard Operating Procedure (SOP) by MSRM but was felt to provide useful logic for locating OGMA's.

In landscape unit B11, Arcview coverage created for identifying OGMA's in landscape unit B11. The Draft OGMA Planning SOP was considered in identifying potential OGMA's. Professional judgement was also used in identifying these OGMA's.

Draft OGMA's for the Boundary area were completed in 2003 and provided to forest licensees and BCTS. A meeting was held between licensees, BCTS, Ministry of Environment and Ministry of Forests to discuss finalizing OGMA's in 2003. Licensees indicated that they had concerns with the draft OGMA's identified. Specifically there were concerns:

- that a number of potential OGMA areas were not reviewed given the process of only identifying 150% of the targets required,
- not enough NP areas were included in NDT 4 areas,
- that constrained harvest areas (riparian areas, wildlife tree patches, recognized special habitat) of younger age classes were not considered,
- that OGMA's as located would lead to timber supply impacts,
- that logged area had been included in error and,
- that some OGMA's located in partial cutting areas should be dropped as the licensee was interested in completing another pass of harvesting.

Pope and Talbot and BC Timber Sales decided that they would do some further review of the OGMA's and also do some additional flying to determine if there was potential for locating alternate OGMA's that had less impact on timber availability and access to timber values. A further meeting was held with Pope and Talbot and BCTS to discuss conditions for proposing changes to ILMB draft OGMA's. The criteria found in Appendix B were agreed to for substituting OGMA's to replace ILMB OGMA's. Pope and Talbot and BCTS completed some helicopter flights to review potential OGMA areas in the spring of 2004. OGMA prm files were supplied to ILMB in November 2004. ILMB was unable to use these files for review and an Arcview coverage was requested. It was decided that landscape units B06 and B10 would be provided to ILMB to review initially to ensure that there was a common understanding of what an acceptable OGMA was.

The licensee proposed OGMA's were reviewed by ILMB in April of 2005. 2003 OGMA's were amended where the author felt the changes were acceptable considering the criteria agreed to. Other changes were made to the 2003 OGMA's based on other factors. A review of the 2003 files showed that some 2003 OGMA's needed to be replaced as they were either logged or Category 'A' in the new data file. Old seral targets had also changed due to new data files and classification of roads as NP. Through the review correction of OGMA mapping errors identified were also corrected. Professional judgement was also used identify revised OGMA's. The factors noted above required that some areas being proposed for deletion by licensees and BCTS be maintained as available area to meet OGMA targets had been reduced. The proposed OGMA's supplied by

licensees and BCTS also showed OGMA targets moving from one biogeoclimatic subzone variant to another which is against the direction of the KBHLPO and therefore some OGMA's proposed were not accepted.

The data files of the completed review were forwarded back to Pope and Talbot and BCTS for their review with a request for a meeting to discuss the results. BCTS staff expressed concerns that all the proposed changes were not all accepted. ILMB made another offer to meet and discuss concerns but BCTS did not get back to ILMB for several months. At this time ILMB policy regarding OGMA's was changing and it appeared ILMB would no longer be going to legal spatial OGMA's. At this time Pope and Talbot was exploring a new direction for identifying OGMA's. For these reasons a follow up meeting was never held to discuss the work completed on landscape units B06 and B10.

In March of 2004, a spatial timber supply analysis (Timberline Forest Inventory Consultants Ltd. and Wilson. 2004) was completed for the Boundary TSA. The base case timber supply analysis completed included the spatial OGMA's identified by ILMB in 2003. This base case showed a flat line harvest level of 615,000 m³ per year. A sensitivity analysis was run using a spatial OGMA's generated by the computer. This sensitivity showed a flat line harvest level of 675,000 m³ per year which is 9% higher than the original base case. The report also noted that decade 2 was a pinch point and that the harvest level could be significantly increased by making more timber available in decade 2. Pope and Talbot foresters indicated they were concerned, that the spatial OGMA's identified were having a timber supply impact. A subsequent analysis was completed by ILMB (Timberline Forest Inventory Consultants Ltd. 2005) which showed the existing Allowable Annual Cut of 700,000 m³ per year could be maintained for at least the next 5 years. The report also indicated that the Boundary TSA had a robust timber supply for the next 50 years. The 2006 timber supply review by the Ministry of Forests was postponed as the Chief Forester determined the AAC for the Boundary TSA would not likely change with a new determination (Ministry of Forests 2006).

Pope and Talbot have been working on developing a Sustainable Forest Management Plan (SFMP) for the Boundary area since 2004. Work has been completed on defining biodiversity indicators, ecosystem representation, mapping estimated merchantability of timber on management areas and optimizing reserve areas such as ungulate winter range, wildlife habitat areas for key species, OGMA's and other areas important to maintaining biodiversity. The 2004 timber supply analysis included an SFMP scenario (Timberline Forest Inventory Consultants Ltd. and Wilson. 2004). In this scenario, a point system was developed that assigned values for merchantability and representation. Values were based on rate of return for merchantability and percentage unmanaged forest area. The status of the 2003 OGMA's was reviewed and the report indicated that 78% of the proposed OGMA's were considered well located in the ranking system. In this scenario an optimization was also completed to replace proposed OGMA's where computer identified OGMA's had higher value in terms of representation and merchantability. This resulted in about 4700 ha being reallocated. This resulted in more area being allocated to areas with poor ecosystem representation, older age classes and lower merchantability. The reallocation also moved areas across biogeoclimatic subzone variants which is not permitted in the direction used to identify the 2003 OGMA's. The requirement to preferentially locate OGMA's into connectivity corridors was also not considered. In order to fully implement a process such as this in locating OGMA's an amendment to the KBHLPO would be required. It should also be noted that this work was based strictly on the data files, where as the 2003 OGMA's were based on some helicopter reconnaissance and review of orthophotos.

In 2006, another project was carried out by Pope and Talbot to use computer modelling, using Patchworks software, to optimize the location of OGMA's for the Boundary area (Timberline Forest Inventory Consultants Ltd. 2006). The following factors were included in the optimization were ILMB's 2003 OGMA's, ecosystem mapping, pine beetle susceptibility rating, ecosystem representation risk and merchantability. The results of the OGMA optimization showed that the net gain in the amount of moderate or high timber return was approximately 4000 ha. Through the optimization approximately 3000 ha moved from TFL 8 to the TSA. The optimization resulted in a significant shift of OGMA into the high ecosystem risk category. The results also generally showed increases in the age of stands the computer chose for OGMA's. The results also showed that there were positive benefits to biodiversity values such as snags and coarse woody debris. The results also show that more OGMA area was allocated to ungulate winter range and scenic areas. Biogeoclimatic subzone variant and connectivity requirements of the KBHLPO were not respected in this optimization and therefore it is doubtful that this would be consistent with the KBHLPO direction.

In the summer of 2006 a meeting was held between ILMB and Pope and Talbot regarding OGMA optimization. Pope and Talbot indicated that they would like to incorporate the work completed through the modeling, with field work they have completed (ungulate winter range, ecosystem representation, species at risk, etc) to develop a more comprehensive and effective set of OGMA's for the Boundary area. In discussions with Pope and Talbot it was apparent that in order to accommodate their request that an amendment to the KBHLPO would be required as their proposal was inconsistent with the direction in the KBHLPO. Specifically the proposal would not respect requirements to allocate targets within biogeoclimatic subzone variants as indicated in objective 2 of the order or connectivity requirements of objective 5. As well age requirements of objective 2 could be amended. Another consideration from ILMB's was that the proposal involved new science and this would have to be reviewed and accepted by government before ILMB would consider an amendment to the KBHLPO.

Discussions were held between Pope and Talbot and ILMB regarding Pope and Talbot's desire to amend the higher level plan to allow them to incorporate ecosystem representation science as a basis for meeting biodiversity requirements during the summer of 2006. ILMB indicated that its time table was to complete OGMA's by March 2007 and that it was provided to consider the Pope and Talbot work provided that they could provide their work within this time frame. Unfortunately, given the complexity of providing ILMB scientific support for the concept of ecosystem representation, changing structure and direction of ILMB and time required to complete field work the 2 schedules did not mesh. ILMB has proceeded to complete spatial OGMA's and Pope and Talbot is currently considering how they will proceed with their SMFP including ecosystem representation and OGMA's.

In the fall of 2006, Pope and Talbot completed some field work to sample areas identified in the optimization project discussed up above. A report on this project was completed in March 2007 (Wilson and Hamilton, 2007). The report results indicated that few of the areas sampled could be considered entirely unmanaged (preferred for allocating OGMA's). It is unclear to the author of this report, how this might impact optimization results if unmanaged area identification is inaccurate. The report also indicated that sites sampled were often associated with structural attributes consistent with younger stands. The report also points out that the status of OGMA's deleted in the optimization in terms of unmanaged status and other characteristics is unknown.

Over 40% of the sites were rated¹ as 2's in the areas sampled. In the OGMA's identified and rated through this in the Boundary OGMA report only a couple of areas had this rating. The majority of the areas sampled (84%) were rated 3 or lower. OGMA's rated in landscape units B06 and B01, 2003 data files showed that in B06 that 100% of the OGMA's chosen were rated 4 or higher. In B01 over 70% of the identified OGMA's were rated higher than 4 or higher. Although not conclusive it seems likely that OGMA's identified through this report or better candidates as old growth than the areas identified through optimization.

BCTS has also indicated that they are now working in conjunction with Pope and Talbot on the SFMP project and view this project as a long term project. They have also indicated that it is their intention to consider ILMB spatial OGMA's at this time as they believe it could be some time before the work on ecosystem representation is accepted and reallocation of OGMA's is completed.

Between January and March of 2007 new data files were developed by ILMB's Land Information Management section. These data files were updated and included the following information:

- Latest harvesting and proposed harvesting,
- new inventory information for TFL 8,
- Pope and Talbot information regarding OGMA patches that had been identified by Pope and Talbot and BCTS through helicopter reconnaissance and,
- information regarding grizzly bear suitability and capability. These files were utilized as a basis for finalizing the Boundary spatial OGMA's.

Other data files considered in the review were cutting permit and inventory files from the Land and Resource Data Warehouse (LRDW) of ILMB. As well BCTS supplied a data file showing their current and proposed cut blocks for the Boundary area which was also considered in the review. Information from Pope and Talbot regarding sampling completed in the ecosystem representation project was also considered in the very late stages of the project. Only a few of the sampled areas were considered as most of the stands identified had OGMA ratings of 3 or less. Of the 6 areas reviewed only one was used to modify previously identified OGMA's. It was felt that the other areas identified may be suitable but would require a thorough review to compare them with existing areas to ensure that they were better than existing OGMA's.

The first step in this process was to identify the CFLB and calculate the OGMA targets by biogeoclimatic subzone variant by landscape unit considering applicable biodiversity emphasis seral targets from the KBHLPO. CFLB and OGMA targets for each landscape unit are shown in Appendix E. It should be noted that CFLB and OGMA's have changed since the project was initiated and the ones show in the appendix represent the most recent information. Changes have occurred as a result of new inventory information and processes for preparing data.

The next step in reviewing the 2003 and 2005 OGMA's identified by ILMB was to eliminate any areas that now showed as private land or woodlot land (woodlots are not subject to OGMA requirements) in the data file. Next OGMA's were reviewed using the data files and orthophotos and satellite imagery to determine if OGMA's had been included in error or harvesting had occurred since the proposed OGMA's were identified. A significant amount of area was eliminated in this process. In some cases areas that showed as logged were retained as they were felt to be suitable recruitment areas despite harvesting. These generally include sites that have been partially harvested and were felt to retain better attributes than other unharvested

¹ Rating were completed using the rating system similar to that used by ILMB in this report.

areas. Many of these areas are located in NDT 4 areas where lower stocking levels of larger trees are considered acceptable (Kootenay Inter-Agency Committee 1997). In some cases areas were shown as logged but were in fact unharvested when recent orthophotos were reviewed. This may be a result of inaccurate mapping of harvested areas in some cases. When some harvested areas were removed, only fragments of the original remained and in these cases the remaining fragments were also deleted. Despite the review completed it is likely that there may be further minor errors both in terms of areas included and excluded as OGMA's.

Once the above process was completed, the amount of OGMA's was calculated for each biogeoclimatic subzone variant by landscape to determine if required targets had been met. If the area was insufficient then the information from the Pope and Talbot helicopter reconnaissance was considered for adding additional areas. In some cases the available areas were utilized to top up required targets. In addition in some cases the areas identified were also used to replace existing ILMB OGMA's, where these areas were considered superior to the existing ILMB OGMA's. In replacing OGMA's consideration was usually given to replacing small OGMA's or OGMA's that were heavily fragmented or roadbed. Where targets were still not achieved further work was completed to identify required targets. Additional areas were identified considering the following factors and using professional judgement:

- Where possible add areas to existing OGMA's to increase size and/or improve connectivity between OGMA's,
- Avoid adding areas where Logdepole Pine is the leading species,
- In NDT 4 areas consider NP forest areas where stocking looked adequate for old growth based on review of orthophotos.
- Given preference to areas that were rated very high for spring grizzly bear capability and age was greater than 100 years.
- Give preference to non timber harvesting land base areas or constrained areas where forest stand values are considered equivalent,
- Avoid areas that are proposed for harvesting considering LRDW and BCTS information,
- Add areas that are adjacent to existing OGMA's where review of orthophotos indicates old growth attributes or other biological value may improve the existing OGMA and,
- Give preference to stands that meet the age requirement or where requirement is necessary closer to the age requirement.

After the final OGMA targets were located for a particular biogeoclimatic subzone variant a final review of OGMA's on the orthophotos was completed to check that areas were not located in areas proposed for future development, pick up mapping errors and to identify areas where OGMA shapes could be improved. This resulted in some further changes which were completed considering the factors noted above.

Public consultation regarding these OGMA's was planned prior to establishing legal spatial OGMA's. Since ILMB has decided not to establish legal OGMA's, it was decided that public consultation was not required.

The data files and map files used to complete this project were updated several times to incorporate new or updated information. The final data and map files used are located have been archived by ILMB and reside on the S drive at the following address-

S:\srm\nel\Workarea\Fwilmer\OGMA07\BoundaryTSA . Hard copy file information on this project can be found on file 17730-30/OGMA/Boundary.

3. Results

The KBHLPO objective seral targets for old have been achieved spatially and are documented in this report. The OGMA maps in Appendix D shows OGMA locations. Appendix E represents in table form the results of the spatialized OGMA's by landscape unit. The tables provide a breakdown of biogeoclimatic subzone variants, biodiversity emphasis assigned, CFLB, OGMA target percentages assigned, OGMA target area required, target reductions for park areas, net spatial OGMA area identified to meet targets, NP areas that have been included in the CFLB and also used to meet OGMA requirements, and NP areas that are included in OGMA's but excluded from the CFLB and from meeting OGMA targets. OGMA required target areas were calculated by multiplying the appropriate OGMA target percent by the CFLB. Following this any areas suitable for OGMA's located in Parks was subtracted from the OGMA targets as per the LUPG. Following this any NP areas that were considered suitable for OGMA's were added to the net CFLB calculated above and new targets were calculated by multiplying the new targets against the revised CFLB. Net spatial OGMA do not include the area identified as NP Area Excluded from Meeting Spatial Target as these are NP areas not suitable for OGMA's such as roads that may traverse an OGMA or NP areas that although they are included as part of the OGMA do not have suitable attributes that warrant their inclusion in meeting targets (includes swamps, lakes, open NP forest areas). Areas identified as NP Area Included for Meeting Spatial Targets were generally identified in NDT 4 areas where open forests with lower stocking are considered suitable OGMA's. Since these areas are included as OGMA's they are also include as CFLB and used for calculating OGMA targets. All figures in the table have been rounded to the nearest hectare based on areas greater than or equal to 0.5 hectares being rounded up.

In the OGMA coverage files the OGMA field has 4 codes. The numbers represent the following:

- 1 means OGMA within the CFLB that contributes to meeting the OGMA target
- 2 means OGMA that is an NP area that does not contribute to meeting the OGMA target
- 3 means OGMA that is an NP area that does contribute to meeting the OGMA target and also to CFLB
- 4 represents areas that have been identified in Parks as being suitable for OGMA and are used to reduce required OGMA targets as per direction from the LUPG

A coverage data file, map and supporting information of the identified OGMA's has been posted to the following FTP site- <ftp://neltfp.env.gov.bc.ca/pub/outgoing/ogma/>.

4. First Nations Consultation

The First Nations within the Boundary area are those associated with the Okanagan Nation Alliance and Shuswap Nation Tribal Council. In March 2003 a meeting was held with the Okanagan Nation Alliance regarding ILMB planning initiatives in the ONA traditional territory area. One of the topics discuss was OGMA in the Boundary area. A map of the draft OGMA's completed at that time was presented to the representatives attending the meeting. ILMB's tentative plans for establishing legal spatial OGMA's was presented to those attending. Representatives from the ONA indicated that they had a capacity problem to responding to referrals from government. They requested financial support from government to review the proposed OGMA's. ILMB had originally planned to further consult with First Nations regarding legalizing spatial OGMA's, however, ILMB has since decided that it would not legalize spatial OGMA's. A letter (ILMB 2007) was forwarded to First Nations to advise them that ILMB would not be

proceeding to legalize spatial OGMA's and also to advise that the OGMA maps and supporting information were available to them.

5. Recommendations

The following recommendations are provided to assist those who plan to use this information. These recommendations are intended to provide guidance for revising spatial seral patches, data management and other matters.

The spatial seral patches identified in this report were identified using limited helicopter reconnaissance, forest cover maps, orthophotos and satellite imagery. It is likely that the some OGMA's may not be located accurately and some adjustments to the locations may be required, since areas were generally not field verified. It is also likely that some OGMA's are not suitable located given operational planning needs and safety concerns. Although the data files used were considered the best information it is likely there are some errors in this information. It is possible that areas may be logged and still show as old forests and or mapped locations may be inaccurate. There are also likely situations where seral patches have equal or better biological values may be available on the landscape than the patches identified. In these cases it may be appropriate to move patches. It is recommended that the following considerations be used in deciding if an identified seral patch is adjusted or replaced:

- a) Are there practicable alternatives to road development or maintenance through an OGMA?
- b) Were there mapping errors in the seral patch and can the boundaries of the seral patch be adjusted to better reflect the physical features that were intended to be included in the seral patch?
- c) Was an OGMA mapped in error?
- d) Can harvest boundary alignment be improved to help ensure continued maintenance of the OGMA?
- e) Can the contiguous area of an OGMA be improved by incorporating adjacent areas that have old forest attributes identified through field assessment?
- f) Is there a substantiated forest health factor within an OGMA that poses a significant risk to forest stands outside the seral patch and requires timber harvesting?
- g) Is there a substantiated public or industrial safety concern within the OGMA that requires timber harvesting?
- h) Where replacement of an OGMA is being considered, can a substitute seral patch be located that provides equal or better retention of key old forest attributes (forest interior, large trees, snags, etc.) that are understood to be important for biodiversity conservation be found?
- i) Is there a process in place to document and map changes (a-h above) to seral patches?
- j) Where data information changes that affects seral targets or existing seral patches, are processes in place to adjust seral targets where required?
- k) Where seral targets change, are there processes in place to review identified OGMA's to ensure that sufficient OGMA's are in place to meet the targets?
- l) In management units where there are multiple licensees present are there agreements on how seral targets and changes to seral patches will be managed?
- m) Is consideration being given to ensuring long term targets will be met in low biodiversity emphasis areas that have been drawn down to one third of targets?
- n) Do First Nations need to be consulted regarding changes?

Data management is an important component of ongoing management of seral patches. To ensure that information is adequately maintained the following is recommended:

- i) Where OGMA's are changed OGMA files should be updated annually.
- ii) OGMA information should be stored at the Kootenay Spatial Data Partnership (KSDP) site.

- iii) Data files approved by the KSDP should be used for ensuring spatial OGMA's meet the seral requirements of the RHLP.
- iv) Where forest inventory changes ensure that the Crown Forest Land Base is consistent with the intent of the LUPG document and the KBHLPO. ILMB may need to review information to ensure potential timber impacts and biodiversity protection resulting from changes maintains the appropriate social, economic and environmental balance intended in the KBHLPO.
- v) Changes with data information used in identifying OGMA's should be reviewed by the KSDP and ILMB before they are utilized.

It is also recommended that research and/or policy development be completed in the following areas:

- i) The use of NP forest areas to meet OGMA targets. A study should be completed of all NP forest areas within NDT 4 areas and other areas where fire maintained ecosystem restoration would be appropriate to determine if these areas should be included in the CFLB and OGMA targets adjusted accordingly. This study should review tree stocking levels to determine minimums acceptable and also to document appropriate old growth attributes for these areas.
- ii) The Landscape Unit Planning Guide Book should be updated considering *Forest and Range Practices Act* legislation.
- iii) Further study is required with respect to using ecosystem representation as a basis for identifying OGMA's. Government needs to put in a corporate policy process for evaluating new science such as ecosystem representation. As well a policy process needs to be put in place which outlines how proponents interested in implementing new science can initiate amendments to higher level plan objectives.
- iv) Policy development is required to address the need to identify OGMA areas in one third draw down areas in low emphasis biodiversity areas. Direction indicates these areas need to achieve full targets by the third rotation. Clarification is required as to who is responsible for ensuring this is addressed. Timber supply review may also be required as going to full targets is dependent on OGMA's not impacting timber if full targets are implemented.

It is also recommended that the Ministry of Forests and Range consult with licensees regarding any proposed new woodlot or salvage tenures where FSP's are not required, to ensure that these areas are not located over areas that are functioning as OGMA. Where a decision is made to approve one of these tenures over an OGMA, a process should be initiated to replace the area affected.

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Appendix A - Draft OGMA Planning SOP

1. DRAFT OGMA PLANNING SOP

1) Purpose

The purpose of this SOP is to ensure:

- consistency in the application of Old Growth Management Area (OGMA) identification;
- that OGMA's are identified considering legal requirements;
- and that the process of identifying OGMA's is properly documented.

2. Background

These procedures have been developed considering the Landscape Unit Planning Guide, Biodiversity Guidebook, *Forest Practices Code of BC Act*, Kootenay Boundary Higher Level Plan Order (KBHLPO) and the Kootenay Boundary Higher Level Plan Order Strategies.

Prior to the Ministry of Sustainable Resource Management becoming responsible for developing Landscape Objectives for biodiversity (OGMA's and WTP's), this function was the responsibility of individual district managers in each of the Forest Districts in the Nelson Forest Region. As a result there has been a variety of different approaches used to identify Potential OGMA's. Generally each district area has developed its own methods for rating Potential OGMA areas. The level of work completed on OGMA's has also varied between districts from with some having completed very little work while others had made substantial progress in identifying Potential OGMA's. The work completed in identifying Potential OGMA's has been underway since 1998. The Landscape Unit Planning Guide was released in 1999 and provided guidance for identifying Potential OGMA's. The KBHLPO and associated strategies was released in 2001 and provides a combination of guidance and direction on old seral targets, how to allocate old seral targets and how to identify OGMA's. The KBHLPO is currently being amended and some requirements for allocating old seral targets have changed. This SOP is intended to consider the existing policy framework and legal requirements and provide a consolidated approach to OGMA planning.

3. Scope

This SOP will only deal with the process of identifying Potential OGMA's and will not deal with the process of writing up objectives, public involvement, SDM approval or implementing and monitoring objectives.

4) Procedures

It is recognized that OGMA planning is at different stages in different forest district areas. These procedures are intended to provide a basis for consistency between areas. Where planning has progressed into the later steps of these procedures it will be necessary to review the process used. If there are only minor variations from these procedures these variations should be documented. If there are significant differences then there will be a need to review Potential OGMA's to determine if areas need to be included or excluded. It is recognized that different planners have used different methods for ranking old growth attributes. Methods used should be reviewed to ensure that consideration has been given to the attributes outlined in Appendix 3 (Evaluation of Candidate Old Growth Management Areas) of the Strategies for the Kootenay Boundary Higher Level Plan Order (May 2001). The methodology used should be documented.

i) Data Preparation

Procedures for preparing the data set required to develop OGMA Landscape Unit Objectives has been developed considering Chapter 2 of the LU Planning Guide. The methodology used in the Kootenay Region is documented in Methodology Documentation for Kootenay Boundary Higher Level Plan Reports (See Appendix I). The Table 998 HLP report (Biodiversity Seral Stage Targets) provides a summary of the timber areas in the mature, mature and old seral categories and how these areas compare to the targets outlined in the HLPO.

ii) Procedures for Identifying OGMA's

STEP 1

Using a GIS mapping system identify approximately 150% of the target specified for each combination of Landscape Unit, Bio-Emphasis Option, Natural Disturbance Type, and Biogeoclimatic subzone and variant. OSP's should be mapped using the following priorities:

- Old seral from non-contributing areas in Important Grizzly Bear Habitat (IGBH)
- Old seral from non-contributing connectivity corridors
- Old seral from contributing areas in (IGBH)
- Old seral from contributing areas in connectivity corridors unless old seral areas outside the connectivity corridor have better conservation values.
- Old seral from other non-contributing areas
- Old seral from constrained areas and open forest areas in NDT 4 areas
- Old seral from other areas
- Oldest mature first from non-contributing IGBH areas, then from non-contributing from connectivity corridors, then from contributing IGBH areas, then from contributing areas in connectivity corridors unless old seral areas outside the connectivity corridor have better conservation values, then from constrained areas and then unconstrained areas, then step down by age class using the rules noted above until enough area has been identified to meet the 150% target.

STEP 2

Identify Old Seral Patches (OSP) from the mapping completed by:

- Consider creating OSP's large enough to create interior condition
- Consider creating OSP's to provide connectivity
- Consider joining adjacent polygons to increase the size OSP's
- Including small (less than 1 ha or up to 5% of the OSP area) areas of younger seral stages where it makes sense for conservation, biodiversity or operational (isolating timber) reasons.
- Eliminating old seral areas if they are less than 2 ha and are not located in riparian, Wildlife Tree Areas or other areas with high conservation values.
- Eliminating areas if they are highly fragmented by harvesting, roads and/or rural development.
- Including areas where forest cover typing is suspected to be inaccurate and photo interpretation or experience indicates areas are potentially old seral.
- Including areas suitable for recruitment where required.
- Including younger seral areas if it has the potential to better meet the Objectives of the HLPO, or there are other benefits to conservation values where recruitment is required.

STEP 3

Where funding is available for flying or ground reconnaissance of OSP's, develop a plan for reviewing OSP's prioritizing areas to be surveyed. Aerial or ground reconnaissance can also be used to identify additional areas where stands contain old attributes. Reconnaissance of OSP should be used to identify old growth attributes.

STEP 4

Where suitable old growth attributes have been identified from aerial, ground reconnaissance or photo interpretation these attributes should be considered in identifying Potential Old Growth Management Area's (POGMA's) as opposed to strictly using age. In those cases where old growth attributes are not found or found to be lacking, those stands should not be generally considered for POGMA's. In cases where old growth recruitment is required chose stands that will become old growth in the shortest time frame or stands that provide better old growth conservation values.

NP areas may be included if they are misclassified as NP or they if they are suitable for open forest in NDT 4 areas. If NP areas are added they must be included in the area calculation used to determine targets.

STEP 5

Identify POGMA's so that the old seral stage levels identified in Objective 2 of the HLPO (100+%) are achieved for each combination of Landscape Unit, Bioemphasis Option, Natural Disturbance Type, and Biogeoclimatic subzone and variant. POGMA's should be identified based on the following priorities and working down starting with OSP's that are considered old by assessment of old attributes or old by age if attributes have not been assessed and then working down by age/attributes until the target is achieved:

- a) Any OSP that is totally non-contributing and is located in an IGBH area.
- b) Any OSP that is totally non-contributing and is located in a connectivity corridor.
- c) Any OSP that is partially non-contributing and is located in an IGBH area.
- d) Any OSP that is partially non-contributing and is located in a connectivity corridor.
- e) Any OSP that is totally contributing, is located in an IGBH area and is within a constrained area.
- f) Any OSP that is totally contributing, is located in a connectivity corridor and is within a constrained area. Unless this would preclude the inclusion of an OSP outside the connectivity corridor that had higher conservation values.
- g) Any OSP that is totally contributing, is located in an IGBH area and is in an unconstrained area.
- h) Any OSP that is totally contributing, is located in a connectivity corridor and located in an unconstrained area. Unless this would preclude the inclusion of an OSP outside the connectivity corridor that had higher conservation values.
- i) Any OSP outside the above noted areas that is totally non-contributing.
- j) Any OSP outside the above noted areas that is partially non-contributing.
- k) Any OSP outside the above noted areas that is contributing and is within a constrained area.
- l) Any OSP outside the above noted areas that is contributing and unconstrained.
- m) Where choosing between OSP with the same priority, choose the OSP (s) that provide the greatest conservation values.
- n) OSP areas with high conservation values, which are considered recruitment areas, may be elevated on this priority list where the importance of conservation values can be established.

STEP 6

Complete an analysis of each LU biogeoclimatic subzone variant by IGBH, connectivity corridor and by other areas and document the following:

- a) That all non-contributing areas that have suitable age or attributes have been included in POGMA's identified or a rationale has been provided for not including them.

- b) That no areas were missed in step 2 or if they were that they have been prioritized according to step 5.
- c) The reason for including any younger seral areas in a POGMA.
- d) The area that targets have changed as a result of reviewing old seral or recruitment areas from Protected Areas.

STEP 7

Provide documentation on the procedures used to identify POGMA's. Where procedures have varied from the procedures noted above provide a rationale for doing so.

iii) Stakeholder and Agency Involvement

Forest licensee planners, Ministry of Forest's district and Timber Sale Program planners and Ministry of Water, Land and Air Protection habitat planners are considered to be key contacts regarding this process. These groups should be contacted on an ongoing basis and be provided opportunities to review work at important phases of the process. Other stakeholder groups may be consulted on a limited basis where it is felt there is some value in letting these groups know what progress is being made. It is recognized that some groups will not have the technical expertise and may not have the desire to be involved in a technical process.

Appendix B – Criteria Considerations for Proposing Alternate OGMA’s

Criteria Considerations for Proposing Alternate OGMA's

The following is a list of criteria jointly developed with forest licensees and Timber Sales BC for proposing alternate OGMA's to replace proposed OGMA's:

1. Use equal or better information than was used to rank the original OGMA (Aerial review, ground review, map review, image analysis).
2. Attributes identified in footnote "k" may be used for ranking mature and old stands. Some "key" stand level attributes such as snags, vets, broken or dead tops, rounded tops, and large tree size are to be used to rank stands. Stand level attributes should carry more weight than landscape level attributes.
3. KBHLP Connectivity requirements are still applicable.
4. Targets are still to be met by LU and BEC Variant as per KBHLPO
5. Small mid seral areas may be considered for inclusion if they can be used to make a logical OGMA.
6. Where a younger seral stand has attributes such as Vet layer or structural attributes those stands may be considered for replacing other OGMA's.
7. Stands that have been rated as open forest that have attributes can be considered. (Multiple layer canopy versus single layer canopy stands)
8. Provided the HLPO seral requirements are met for any blocks proposed over an OGMA on an FDP prior to September 1, 2003, will take precedence over the proposed OGMA.
9. Stand alone OGMA's must be greater than 2 ha.
10. Proposed substitute OGMA's with existing OGMA ratings equal or better than a mapped OGMA can be used to replace that OGMA provided that KBHLPO connectivity requirements are not compromised.
11. OGMA substitution must be hectare for hectare except where NP forest is proposed as a replacement. In this case the substitution rate needs to be NP forest (ha) X (100% + Old seral requirements %). For example a 100 ha substitute OGMA in intermediate BEO within the IDF (NDT 4) would require the following area for substitution: $100 \text{ ha} \times (100\% + 13\%) = 113 \text{ ha}$.
12. Lodgepole Pine (PI) is not a preferred species for replacing existing OGMA's unless the subject OGMA is PI leading. PI leading is considered 49 %+ by forest type label or by ground sampling. Stands that are not PI leading according to the above definition may be considered for OGMA replacement.

Licensees and Timber Sales BC should provide the following documentation for areas proposed for replacement including:

- Reason for replacing the OGMA
- Documentation of above criteria used to propose substitute OGMA(s).
- Documentation of information used to rank proposed substitute OGMA(s)

Appendix C Old Growth Attribute Data Collection Form

Old Growth Attribute Data Collection Form

Map	Patch #	Large Tree Abundance L/M/H	Vet Abundance L/M/H	Snag Abundance L/M/H	Broken top Abundance L/M/H	Dead top Abundance L/M/H	Gaps Yes/No	Lichen Yes/No	CWD Yes/No	Multi Story Yes/No	Old Growth Yes/No	Old Growth 0-5	Comments

Appendix D Boundary OGMA Map

This map is available at the following FTP site - <ftp://neltfp.env.gov.bc.ca/pub/outgoing/ogma/maps> . The map file is labelled ogma_bd_70501.

Appendix E - OGMA Target Tables by Landscape Unit

Landscape Unit B01 OGMA Target Table

BEC	BEO	CFLB ²	OGMA Target %	OGMA ³ Target Area	Target Reduction for Park Area	Net Spatial OGMA Area ¹	NP Area ⁴ Included for Meeting Spatial Target	NP Area Excluded from Meeting Spatial Target
ESSFdc1	I	1379	14	193	0	203	0	6
ICHmk1	I	4234	14	593	0	595	0	26
IDFdm1	H	15380	19	2922	0	2944	182	88
IDFxb1	H	2012	19	352	30	355	34	17
MSdm1	I	11573	14	1620	0	1623	0	57
PPdh1	I	229	13	13	17	18		

1. Net spatial area includes NP area inclusions but excludes NP areas excluded from meeting spatial targets (this includes roads, swamps, and other areas not suitable for meeting OGMA targets).
2. CFLB includes area identified as CFLB and also NP area included for meeting spatial targets.
3. OGMA Target Area reduced by the amount of suitable old seral found in Parks
4. This area is included in the net spatial OGMA area and also gets added to the CFLB.

Landscape Unit B02 OGMA Target Table

BEC	BEO	CFLB ²	OGMA Target %	OGMA Target Area	Target Reduction for Park Area ³	Net Spatial OGMA Area ¹	NP Area Included for Meeting Spatial Target ⁴	NP Area Excluded from Meeting Spatial Target
ESSFwc4	I	499	9	45	0	45	0	0
ICHdw	I	0	14	0	0	0	0	0
ICHmk1	I	7558	14	1058	0	1066	0	11
ICHmw2	I	6	9	1	0	2	0	0
IDFdm1	I	3674	13	478	0	372	113	5
IDFxb1	I	113	13	15	0	18	4	0
PPdh1	I	178	13	23	0	36	0	1

1. Net spatial area includes NP area inclusions but excludes NP areas excluded from meeting spatial targets (this includes roads, swamps, and other areas not suitable for meeting OGMA targets).
2. CFLB includes area identified as CFLB and also NP area included for meeting spatial targets.
3. OGMA Target Area reduced by the amount of suitable old seral found in Parks
4. This area is included in the net spatial OGMA area and also gets added to the CFLB.

Landscape Unit B03 OGMA Target Table

BEC	BEO	CFLB ²	OGMA Target %	OGMA ³ Target Area	Target Reduction for Park Area	Net Spatial OGMA Area ¹	NP Area ⁴ Included for Meeting Spatial Target	NP Area Excluded from Meeting Spatial Target
ESSFdc1	I	3793	14	531	0	540	0	24
ESSFwc4	I	6192	9	0	1083	0	0	0
ICHdw	I	8235	14	1153	0	1166	3	46
ICHmk1	I	16007	14	1306	935	1321	0	23
ICHmw2	I	4194	9	255	123	263	0	5
IDFdm1	I	3723	13	484	0	488	90	3

1. Net spatial area includes NP area inclusions but excludes NP areas excluded from meeting spatial targets (this includes roads, swamps, and other areas not suitable for meeting OGMA targets).
2. CFLB includes area identified as CFLB and also NP area included for meeting spatial targets.
3. OGMA Target Area reduced by the amount of suitable old seral found in Parks
4. This area is included in the net spatial OGMA area and also gets added to the CFLB.

Landscape Unit B04 OGMA Target Table

BEC	BEO	CFLB ²	OGMA Target %	OGMA ³ Target Area	Target Reduction for Park Area	Net Spatial OGMA Area ¹	NP Area ⁴ Included for Meeting Spatial Target	NP Area Excluded from Meeting Spatial Target
ESSFwc4	I	7669	9	204 ³	486	216	0	1
ICHdw	I	10301	14	430 ³	1012	438	2	12
ICHmk1	I	2947	14	413	0	421	0	4
ICHmw2	I	18811	9	879 ³	814	895	0	15
IDFdm1	I	91	13	12	18	0	0	0
IDFxl1	I	344	13	45	0	52	26	0
PPdh1	I	0	13	0	0	0	0	0

1. Net spatial area includes NP area inclusions but excludes NP areas excluded from meeting spatial targets (this includes roads, swamps, and other areas not suitable for meeting OGMA targets).
2. CFLB includes area identified as CFLB and also NP area included for meeting spatial targets.
3. OGMA Target Area reduced by the amount of suitable old seral found in Parks
4. This area is included in the net spatial OGMA area and also gets added to the CFLB.

Landscape Unit B05 OGMA Target Table

BEC	BEO	CFLB ²	OGMA Target %	OGMA ³ Target Area	Target Reduction for Park Area	Net Spatial OGMA Area ¹	NP Area ⁴ Included for Meeting Spatial Target	NP Area Excluded from Meeting Spatial Target
ESSFdc1	L	4586	4.7	216	0	220	0	0
ICHmk1	L	697	4.7	32	1	37	4	0
IDFdm1	L	15547	4.3	669	0	684	222	2
MSdm1	L	20581	4.7	967	0	979	0	16

1. Net spatial area includes NP area inclusions but excludes NP areas excluded from meeting spatial targets (this includes roads, swamps, and other areas not suitable for meeting OGMA targets).
2. CFLB includes area identified as CFLB and also NP area included for meeting spatial targets.
3. OGMA Target Area reduced by the amount of suitable old seral found in Parks
4. This area is included in the net spatial OGMA area and also gets added to the CFLB.

Landscape Unit B06 OGMA Target Table

BEC	BEO	CFLB ²	OGMA Target %	OGMA ³ Target Area	Target Reduction for Park Area	Net Spatial OGMA Area ¹	NP Area ⁴ Included for Meeting Spatial Target	NP Area Excluded from Meeting Spatial Target
ESSFdc1	L	16314	4.7	767	0	781	0	11
ICHmk1	L	12434	4.7	584	0	608	0	9
IDFdm1	L	14858	4.3	644	0	663	9	4
MSdm1	L	24265	4.7	1140	0	1156	0	94

1. Net spatial area includes NP area inclusions but excludes NP areas excluded from meeting spatial targets (this includes roads, swamps, and other areas not suitable for meeting OGMA targets).
2. CFLB includes area identified as CFLB and also NP area included for meeting spatial targets.
3. OGMA Target Area reduced by the amount of suitable old seral found in Parks
4. This area is included in the net spatial OGMA area and also gets added to the CFLB.

Landscape Unit B07 OGMA Target Table

BEC	BEO	CFLB ²	OGMA Target %	OGMA ³ Target Area	Target Reduction for Park Area	Net Spatial OGMA Area ¹	NP Area ⁴ Included for Meeting Spatial Target	NP Area Excluded from Meeting Spatial Target
ESSFdc1	L	7078	4.7	333	0	341	0	2
ICHmk1	L	9830	4.7	462	0	471	0	11
ICHmw2	L	92	3.0	3	0	3	0	0
IDFdm1	L	5285	4.3	229	0	243	27	3
MSdm1	L	15257	4.7	717	0	728	0	17

1. Net spatial area includes NP area inclusions but excludes NP areas excluded from meeting spatial targets (this includes roads, swamps, and other areas not suitable for meeting OGMA targets).
2. CFLB includes area identified as CFLB and also NP area included for meeting spatial targets.
3. OGMA Target Area reduced by the amount of suitable old seral found in Parks
4. This area is included in the net spatial OGMA area and also gets added to the CFLB.

Landscape Unit B08 OGMA Target Table

BEC	BEO	CFLB ²	OGMA Target %	OGMA ³ Target Area	Target Reduction for Park Area	Net Spatial OGMA Area ¹	NP Area ⁴ Included for Meeting Spatial Target	NP Area Excluded from Meeting Spatial Target
ESSFdc1	L	3106	4.7	146	0	193	15	7
ICHmk1	L	3	4.7	0	0	0	0	0
IDFdm1	L	13620	4.3	586	0	610	61	15
MSdm1	L	32326	4.7	1519	0	1544	11	30

1. Net spatial area includes NP area inclusions but excludes NP areas excluded from meeting spatial targets (this includes roads, swamps, and other areas not suitable for meeting OGMA targets).
2. CFLB includes area identified as CFLB and also NP area included for meeting spatial targets.
3. OGMA Target Area reduced by the amount of suitable old seral found in Parks
4. This area is included in the net spatial OGMA area and also gets added to the CFLB.

Landscape Unit B09 OGMA Target Table

BEC	BEO	CFLB ²	OGMA Target %	OGMA ³ Target Area	Target Reduction for Park Area	Net Spatial OGMA Area ¹	NP Area ⁴ Included for Meeting Spatial Target	NP Area Excluded from Meeting Spatial Target
ESSFdc1	I	16329	14	2286	2286	0	0	0
ESSFwc4	I	14249	9	1282	1275	7	0	0
ICHdw	I	8757	14	1191	35	1203	0	65
ICHmk1	I	732	14	102	0	104	0	8
ICHmw2	I	15136	9	1362	706	668	0	5

Landscape Unit B10 OGMA Target Table

BEC	BEO	CFLB ²	OGMA Target %	OGMA ³ Target Area	Target Reduction for Park Area	Net Spatial OGMA Area ¹	NP Area ⁴ Included for Meeting Spatial Target	NP Area Excluded from Meeting Spatial Target
ESSFwc4	H	12717	13	1653	0	1660	0	7
ICHdw	I	9011	14	1262	0	1288	0	66
ICHmk1	I	2596	14	363	0	378	0	9
ICHmw2	I	25656	9	2309	0	2350	0	26
IDFdm1	I	1	0	0	0	0	0	0

1. Net spatial area includes NP area inclusions but excludes NP areas excluded from meeting spatial targets (this includes roads, swamps, and other areas not suitable for meeting OGMA targets).
2. CFLB includes area identified as CFLB and also NP area included for meeting spatial targets.
3. OGMA Target Area reduced by the amount of suitable old seral found in Parks
4. This area is included in the net spatial OGMA area and also gets added to the CFLB.

Landscape Unit B11 OGMA Target Table

BEC	BEO	CFLB²	OGMA Target %	OGMA³ Target Area	Target Reduction for Park Area	Net Spatial OGMA Area¹	NP Area⁴ Included for Meeting Spatial Target	NP Area Excluded from Meeting Spatial Target
ESSFdc1	H	12492	21	2592	31	2604	0	97
ESSFwc4	I	4744	9	183	244	210	0	2
ICHmk1	I	26495	14	3699	10	3727	0	100
MSdm1	I	2960	14	414	0	435	0	2

1. Net spatial area includes NP area inclusions but excludes NP areas excluded from meeting spatial targets (this includes roads, swamps, and other areas not suitable for meeting OGMA targets).
2. CFLB includes area identified as CFLB and also NP area included for meeting spatial targets.
3. OGMA Target Area reduced by the amount of suitable old seral found in Parks
4. This area is included in the net spatial OGMA area and also gets added to the CFLB.