Chilliwack Forest District Landscape Unit Planning

Fraser Canyon Landscape Units - Background Report for:

Spuzzum Landscape Unit
Ainslie Landscape Unit
Anderson Landscape Unit
Mehatl Landscape Unit
Nahatlatch Landscape Unit

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Background Report – Fraser Canyon Landscape Units

1.0 Introduction

This report provides background information used during the preparation of the Sustainable Resource Management Plan and associated legal objectives for the Fraser Canyon landscape units. This plan will form the biodiversity conservation chapter of the plan; it is an aggregate of five Landscape Units (LU) including: Ainslie, Anderson, Nahatlatch, Mehatl, and Spuzzum. Descriptions of each of the five landscape units, discussions on significant resource values, and Old Growth Management Area (OGMA) summary and rationale are provided in Appendices 1-5. This report also explains the rationale used during the planning stage. A summary of public comments received during the 60 day review and comment period is provided in Appendix 6.

Biological diversity or biodiversity is defined as: *'the diversity of plants, animals and other living organisms in all their forms and levels of organisation, and includes the diversity of genes, species and ecosystems as well as the evolutionary and functional processes that link them*[1]*'.* British Columbia is the most biologically diverse province in Canada. In British Columbia, 115 species or subspecies of known vertebrates and 364 vascular plants are listed for legal designation as threatened or endangered[2]. The continuing loss of biological diversity will have a major impact on the health and functions of ecosystems and the quality of life in the province (Resources Inventory Committee, 1998).

Planning for OGMA and Wildlife Tree Patch (WTP) biodiversity values is recognized as a high priority for the province. LU planning is an important component of the *Forest Practices Code of BC Act (FPC)* which allows legal establishment of objectives to address landscape level biodiversity values. Implementation of this initiative is intended to help sustain certain biodiversity values. Managing for biodiversity through retention of old growth forests is important not only for wildlife, but can also provide important benefits to ecosystem management, protection of water quality and preservation of other natural resources. Although not all elements of biodiversity can be, or need to be, maintained on every hectare, a broad geographic distribution of old growth ecosystems is intended to help sustain the genetic and functional diversity of native species across their historic ranges.

The Chilliwack Forest District has completed draft LU boundaries and established draft Biodiversity Emphasis Options (BEO) in accordance with the direction provided by government. There are 24 LUs within the forest district which have been combined into five aggregate landscape unit planning areas. Approval of this plan will allow legal establishment of LU boundaries, BEOs and objectives for the 5 LUs described.

Through a ranking process each LU was rated as either Low, Intermediate or High BEO. Designation as either Intermediate or High requires that priority biodiversity provisions, such as old growth retention be achieved immediately. Designation as Low BEO requires that one-third of the total old growth retention

[1] FPC Biodiversity Guidebook definition. September 1995.

[2] BC Species and Ecosystems Explorer. 2003. Victoria, British Columbia. Available at: http://srmapps.gov.bc.ca/apps/eswp/

requirements be achieved immediately. The remaining two-thirds are established through a recruitment plan and must be in place within three rotations or 240 years. However, if non-contributing land base is used for recruitment then the full old growth retention targets can be achieved now (this latter approach was used for the Spuzzum LU).

Delineation of old growth management areas and wildlife tree retention levels (WTR), was undertaken by Ministry of Sustainable Resource Management with information provided by Ministry of Forests (MOF) and Ministry of Water, Land and Air Protection (MWLAP) staff. Input was also solicited from forest licensees and First Nations. Refer to the attached maps for the location of OGMAs and old growth representation from protected areas.

Supporting documentation regarding government policy, planning processes and biodiversity concepts are provided in the 1995 *Biodiversity Guidebook*, the 1999 *Landscape Unit Planning Guide* (LUPG), the *Vancouver Forest Region Landscape Unit Planning Strategy (1999),* as well as *Sustainable Resource Management Planning Framework: A Landscape-level Strategy for Resource Development*.

2.0 Landscape Unit Objectives

Landscape Unit objectives will be legally established within the framework of the FPC and as such will become Higher Level Plan objectives. Other Operational Plans must be consistent with these objectives.

OGMA and WTR Landscape Unit objectives apply only to provincial forest lands. While park and Crown forest lands outside of provincial forest may contribute to old seral representation, LU objectives do not apply to these areas (e.g. Mehatl Park, Stoyoma Ecological Reserve). Throughout this report, old forest representation in protected areas is referred to as OGMAs, however the map differentiates between the two land bases.

OGMAs were established in each BEC variant throughout each LU to the full target as shown by the attached maps (except in one case where 6 hectares is accommodated in another variant). This follows the coarse filter approach to biodiversity management whereby representative old growth stands are protected to maintain ecosystem processes and wildlife habitat requirements that may be poorly understood.

3.0 OGMA Planning Considerations and Rationale

This section is intended to provide information regarding LU planning considerations and to explain the rationale used during OGMA delineation.

3.1 Ecosystem Management: Each LU contains varying amounts of mature forested habitat provided by existing processes (e.g. some LUs have spotted owl Special Resource Management Zone, some have parks) from which to build on for ecosystem management. The FPC ungulate winter range process, once completed, will also help provide a foundation for ecosystem management. In addition, Wildlife Habitat Areas that may be established in future will also improve connectivity; and in the long term, re-establishment of riparian reserve zones to old forest will improve upon ecosystem integrity. The habitat provided by these various processes together with OGMAs provide the fundamental components to achieve a functioning ecosystem.

An important part of the OGMA planning exercise was to ensure that these separate processes complemented each other. For example, OGMAs, where practical, were placed to create larger habitat patches in the vicinity of known spotted owl activity centres. In other cases, OGMAs were placed within or adjacent to ungulate winter range to overlap constraints and to increase patch size. These larger patches then allow greater opportunity to improve connectivity between adjacent patches. The intent is to maintain a series of old forest habitat patches across probable movement corridors to allow wildlife dispersal and gene flow. Species such as deer are particularly susceptible to mortality in winter, connecting or aggregating OGMAs may help facilitate deer movement in addition to benefiting biodiversity. Using this approach with stand level biodiversity measures will increase the likelihood of sustaining ecosystems and viable wildlife populations well distributed across their natural range.

3.2 Timber Supply and Mitigation: During delineation of OGMAs for priority biodiversity provisions an attempt was made to mitigate the short and long-term impacts on timber supply. For example, OGMAs were delineated first in the non-contributing forest land base. Since representation must be at the variant level, the non-contributing land base could not always satisfy old forest requirements. Where this occurred, portions of the timber harvesting land base from most constrained to least constrained were assessed and included as OGMAs. Generally, more THLB was required in lower elevation variants due to a longer disturbance history and lesser amounts of non-contributing forest land.

OGMAs were chosen in the oldest available age class first, however, old forest stands that were approved or proposed for harvesting on Forest Development Plans (FDP) were excluded from candidate OGMAs following direction outlined in the *Landscape Unit Planning Guide*. Licensees also reviewed the maps and identified future harvesting opportunities so that timber supply impacts could be reduced wherever possible.

3.3 OGMA Age Classes: In most of the Landscape Units in the Fraser Canyon area there was insufficient old forest (250+ years) in most BEC variants to meet OGMA targets. Therefore, it was necessary to designate younger aged mature stands (i.e. mostly age 141-250 years, with some age 101-140 years) as recruitment OGMAs (except in Spuzzum LU, Low BEO where about 200 ha of OGMA is <100 years old). Where possible, mature stands that had old forest attributes (e.g. snags, multi-layered canopy) or high resource values (e.g. spotted owl, deer winter range) were chosen as recruitment OGMAs.

3.4 OGMA Assessment and Review: Individual OGMA polygons were assessed by aerial photograph interpretation, forest cover information, aerial reconnaissance and/or field inspections in an attempt to evaluate stand attributes and biodiversity values/attributes. During helicopter reconnaissance physical parameters such as stocking density, tree size, presence of snags and multi-layered canopies were used to assess the suitability of a given site as OGMA. For example, stands with low stocking were excluded. When reviewing forest cover maps, forest stands labelled as height class 2 (tree heights <20 m) were not usually considered eligible for OGMA because they were not viewed as representative. More hectares than were needed to meet OGMA targets were originally assessed so that unsuitable candidate areas could be deleted from draft maps. Following the helicopter flight and after discussions with licensees and First Nations, candidate areas were adjusted to the approximate

OGMA target by variant. See Table 3 in Appendices 1-5 for a more detailed description of OGMA attributes specific to each LU.

This approach provides some certainty that candidate forest stands include suitable ecological attributes for OGMA purposes, thereby reducing the risk to biodiversity from having to establish substantial amounts of mature stands as recruitment OGMAs.

Some non-contributing forest land such as riparian reserve zones could not be assessed or included in OGMAs at this time. This is because prior to 1995 riparian reserve zones were not required, and as a result harvested riparian areas do not provide old growth attributes in the shortest possible time frame (as per direction for Higher BEO LUs in the *Higher Level Plans: Policy and Procedures*). In addition, some forested riparian areas are too small, narrow or fragmented to function for landscape level biodiversity values. As stand succession proceeds,
these stands may be assessed for OGMA inclusion based on stand structure and biodiversity attributes.

3.5 OGMA Amendment Procedures: An MSRM Coast Region policy has been developed and approved to give direction to proponents (forest tenure holders) when applying for amendments to OGMA legal objectives. Amendment procedures cover such things as minor or major amendments for resource development (e.g. roads, bridges, boundary issues, rock quarries & gravel pits) or relocation of OGMAs. The policy also discusses acceptable management activities and review procedures, and forms an integral part of this LU plan.

3.6 OGMA Boundary Mapping: OGMA boundaries used natural features wherever possible to ensure they could be located on the ground. OGMAs were also delineated to include complete forest stands (forest cover polygons) wherever possible to reduce operational uncertainty and increase ease of OGMA mapping. OGMAs were mapped using a 1:20000 scale TRIM base which forms the legal standard for measurement.

4.0 Other Biodiversity Provisions

The *Landscape Unit Planning Guide* makes reference to comprehensive biodiversity planning which includes elements such as: seral stage distribution, landscape connectivity, species composition, and temporal and spatial distribution of cutblocks (patch size). These other elements can be considered during establishment of priority biodiversity provisions only if doing so does not delay the establishment of priority biodiversity objectives and does not impact regional timber supply. Further, these additional provisions should first be tested as draft objectives. In the Chilliwack Forest District, earlier timber supply analysis indicated that there would be an impact to timber supply to implement comprehensive priority provisions. Given that scenario, this phase of LU planning concentrated on priority biodiversity provisions.

Biodiversity elements, such as forest interior habitat and stand structure, are to be met within the framework provided for priority biodiversity provisions.

4.1 Wildlife Tree Retention: The percent required for wildlife tree retention described in Table A of the *Legal Objectives* for each Landscape Unit does not have to be fully implemented on a cutblock-by-

cutblock basis. Instead, the retention objective can apply over a larger area (e.g. FDP or equivalent), so long as the retention target is met each 3 year period. The intent is to provide limited flexibility for retention at the cutblock level provided that the legally required percentage is met across the subzone. Since wildlife tree retention is a stand level biodiversity provision, wildlife tree patches are also to be distributed across each subzone and LU.

5.0 Summary

Within the five Fraser Canyon landscape units a total of 18826 ha of OGMAs are being established by this plan. The majority (13659 ha) comes from the Non-Contributing land base, with 2036 ha from the Contributing land base, another 1936 ha from the Partial Contributing and 1195 ha from Parks or Protected Areas. After applying the netdown factors for the Partial Contributing land base, the total amount within the timber harvesting land base is 2797 ha which represents 4.1% of the overall THLB (67500 ha) in the five landscape units. This 4.1% should be considered a maximum since mitigation efforts that occurred during licensee meetings are not easily reported (e.g. some THLB area was inoperable or uneconomical for harvesting by licensees; or some areas are riparian reserve zones).

6.0 Appendices

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Appendix 1– Spuzzum Landscape Unit

1.0 Spuzzum Landscape Unit Description

The Spuzzum LU encompasses 31501 ha, which includes all of Spuzzum Creek watershed and the smaller Tsileuh/Black Creek watersheds immediately to the north. Spuzzum Creek together with all its tributary streams is a small to medium sized watershed flowing into the Fraser River just south of Spuzzum townsite. Of the total area, 14937 ha (47.4%) is within the Crown forest land base, and 9327 ha of Crown forest land is within the Timber Harvesting Land Base (THLB). The remaining 16564 ha (52.6%) are non-forested or non-Crown (e.g. rock, alpine tundra, water, private land) and have been excluded from any OGMA contributions and calculations.

The entire LU is situated within the Coast and Mountains Ecoprovince in the Eastern Pacific Ranges Ecosection. The landscape unit is comprised of 5 Biogeoclimatic Ecosystem Classification (BEC) subzones/variants ranging from low elevation Interior Douglas-fir adjacent to the Fraser River canyon to high elevation Alpine Tundra further west. These 5 variants represent 4 Natural Disturbance Types (NDTs)[3]. Approximately half of the landscape unit is in NDT2, with 23% in NDT1. NDT5 includes 21% of the landbase and the remaining 7% is located in NDT4.

The Spuzzum has sustained significant levels of disturbance. Much of the lower elevation productive and gentle terrain sites have been disturbed by past forest harvesting, fire or other events. The low level of old seral forest remaining within the Spuzzum LU reflects this disturbance history.

Major habitat types present in the Spuzzum LU include: upland forest, riparian forest, small lakes and wetlands, steep partly forested rocky slopes, sub-alpine forest, and alpine; all of which contribute to the area's complexity.

2.0 Significant Resource Values

The proximity of the Spuzzum LU to the various First Nations interest areas, the Trans-Canada highway and associated communities affects the relative values of the LUs resources and corresponding management strategies. The Landscape Unit supports a wide range of significant natural resource values and features, as well as a diversity of social and cultural values and influences. This combination together with an extensive forest road network add complexity to resource management in this area.

2.1 Fish, Wildlife and Biodiversity: Wildlife resources of primary management concern in the Spuzzum LU include: grizzly bear, spotted owl, mule deer, mountain goat, fish and some species at risk that are considered "Identified Wildlife"[4]. Many other species occur including forest birds, raptors, small

[3] NDT 1 encompasses those ecosystems with rare stand-initiating events. NDT 2 includes ecosystems with infrequent stand-initiating events. NDT 4 ecosystems are those with frequent stand-maintaining fires. NDT 5 is Alpine Tundra. For a more complete description of NDTs see the *Biodiversity Guidebook* (1995).

[4] Volume 1 of the *Identified Wildlife Management Strategy* includes a list of 36 wildlife species and 4 plant communities that are considered to be at risk. These species or plant communities require special management of critical habitat to maintain or restore populations or distributions. Critical habitat is protected within Wildlife Habitat Areas. See the *Identified Wildlife Management Strategy Volume 1 February 1999* for more information.

mammals, amphibians and furbearers but their habitat requirements are generally managed within habitat provisions provided for primary species. For example, habitat for spotted owls in the Spuzzum LU is maintained within a Special Resource Management Zone (SRMZ) which covers approximately 4520 ha of gross forested area. At present, about 49% of this is suitable owl habitat (>100 years old forest) with a requirement to recruit another 808 ha (18%) of suitable owl habitat to reach a total of 67% suitable owl habitat in the SRMZ. This owl habitat would support other species using old forests.

The Spuzzum LU is also an important area for mule deer with 374 ha of deer winter range (Classic, Crown forest only) identified by MWLAP. All or a portion of this area is being considered for legal establishment as Ungulate Winter Range (UWR) under the FPC according to a Deer winter Range Management Plan (Freeman, 2002). Mountain goat winter range habitat has already been mapped (157 ha of Crown forest) and a similar process will be used to protect it under the FPC. Some of the UWR overlaps with Spotted Owl SRMZ and some of each species' habitats have been captured in OGMA. The habitat maintained for ungulates would also benefit other species.

Further, most of Spuzzum Creek and its major tributaries support resident salmonid populations. Riparian reserve zones established (as per the FPC) adjacent to these fish streams will help maintain fish and wildlife habitat. Where riparian areas have been logged, habitat will be provided in the future as it re-grows.

Grizzly bears in the Spuzzum LU are within the threatened Stein-Nahatlatch grizzly bear population unit for which a Recovery Plan has yet to be developed. In general, the Recovery Plan once completed will include objectives and strategies to protect and/or enhance grizzly bear habitat values. Grizzly bears are also an Identified Wildlife species. Provisions exist to protect some critical foraging or security habitat within Wildlife Habitat Areas (WHA). Designation of WHAs may occur as necessary or as part of the Recovery Plan to protect additional grizzly bear habitat in the Spuzzum LU. Other species of Identified Wildlife (e.g. northern goshawk, tailed frog) that may be discovered later may receive habitat protection with WHAs as well. In turn, these WHAs will help provide habitat for species not actively managed for.

Several fish and wildlife inventories have been undertaken in the landscape unit. Deer winter range inventory was completed in winter 2001-2002, although only draft deer winter range maps were available for use during OGMA delineation. A small amount of deer winter range inventory was also undertaken in 1995 (Spencer, 1995). In 1997, an FRBC funded Fish Habitat and Riparian Assessment Report (McQuibban & Freeman, 1998) was completed which confirmed resident rainbow trout presence throughout most of the upper reaches of the watershed (e.g. distributed in all streams <20% gradient). Anadromous salmon are present in lower Spuzzum Creek below the falls at 2.4 km upstream. An important component of the report was to identify fisheries restoration opportunities. Ministry of Environment, Lands and Parks (MELP, now called MWLAP) district staff conducted mountain goat winter range inventory during winter 2000, to identify critical mountain goat winter habitat for protection (Jex, 2002). Spotted owl inventory efforts have occurred periodically since 1989. Inventory efforts to date have helped to identify critical wildlife habitats, which were considered during OGMA delineation.

2.2 Timber Resources: The presence of a substantial timber harvesting land base establishes the importance of timber resource values. Continued access to commercially valuable timber, including

future second growth, is a significant concern. First pass harvesting of accessible old growth timber is nearing completion.

Commercially valuable tree species in the Spuzzum LU are Douglas-fir with some sub-alpine fir and hemlock at lower elevations. Hemlock, sub-alpine fir, Engelmann spruce and western red cedar are the most common species at mid to higher elevations. Based on forest cover information, Table 1 shows the age composition of forests in the Spuzzum LU.

Table 1. Age distribution of forests within the Spuzzum Landscape Unit.

Age	**% of Crown Forested Landbase**
0-60	46%
61-140	17%
141-250	21%
251+	16%

Most of the forests have medium site productivity. Forests in the Spuzzum landscape unit are generally more productive than forested areas on the east side of the Fraser River due to the increasing coastal influence on climate and ecology.

Three licensees have forest tenures in this landscape unit. The BC Timber Sales (BCTS) program, operated by the Ministry of Forests, conducts forest management operations in the Spuzzum drainage. Timber sales issued by BCTS are sold to registered small business operators. The operating areas for International Forests Products Limited (Interfor) are the Tsileuh/Black and Inkawthia watersheds located north and south of Spuzzum Creek. Interfor processes most of the harvested timber in their own facilities, however some is sold to other companies. Western Forest Products Ltd. holds several small parcels of Timber Licence along mainstem Spuzzum and Urquhart Creek; once harvested these areas will return to Crown.

Forest management activities occur throughout all phases of forest development. Operational work includes pre-harvest planning, harvesting and stand regeneration. Post harvest activities include planting, brushing, juvenile spacing, pruning and thinning.

2.3 Private Land: Only small parcels of private land occur within the Spuzzum LU, mainly adjacent to the eastern boundary at Spuzzum townsite and along the Trans-Canada highway. Much of the private land has been altered from its natural state for housing and major travel corridors. At this time, Crown forest adjacent to the private land is not considered suitable for OGMAs because of its younger age class and its contribution to the timber harvesting land base.

2.4 First Nations: The Spuzzum LU is located within the traditional territory of the Nlaka'pamux First Nation (NNTC), Yale First Nation, Sto:lo Nation and the Cheam Band. Portions of the landscape unit (near Spuzzum town site) are important traditional hunting areas for the Nlaka'pamux First Nation.

There is evidence of traditional use in several areas near the Fraser River canyon including forest stands with culturally modified trees. Trail systems extending into the Spuzzum valley are also present. Several Indian Reserves are situated near the Fraser River.

Between 1997 and 1999, an Archaeological Overview Assessment model was developed by MOF to indicate where archaeological sites are most likely located. This was done to minimize potential impacts by forestry operations on culturally important areas. The model was useful in predicting the location of habitation sites and high elevation campsites in the sub-alpine. Travel routes were also identified.

The maps produced from the model were reviewed to determine if archaeological potential sites and travel routes were captured in OGMAs. In the Spuzzum LU, sections of traditional travel routes were captured in OGMAs when they overlapped with areas of old forest along the mid to upper slopes. Potential archaeological sites located near higher elevation lakes (riparian) were also included in OGMAs when there were old or mature forests in the same locations.

2.5 Mining and Mineral Exploration: Subsurface resources (minerals, coal, oil, gas and geothermal) and aggregate resources are significant to the province. OGMAs have been located to avoid existing tenures wherever possible. It is important to note that establishment of old growth management areas will not impact the status of existing mineral, aggregate and gas permits or tenures; exploration and development activities are permitted. The preference is to proceed with exploration and development in a way that is sensitive to the old growth forest attributes of the OGMA; however if exploration and development proceeds to the point of significantly impacting old growth values, then the OGMA will be relocated.

2.6 Recreation: The extensive forest road network has increased recreational opportunities for the public. Recreational hunting in the Spuzzum LU is an important annual activity enjoyed by many outdoor enthusiasts; most hunters would target black bears or deer. Winter recreational activity is normally restricted by seasonal road deactivation and snow accumulation, although snowmobiling could occur on road systems or alpine areas. Stream angling opportunities are also limited since stream resident fish are quite small, however Inkawthia Lake and an unnamed headwater lake were stocked with rainbow trout in 1966 and 1982 respectively. ATV, motorcycle and four wheel drive use of roads for recreation occurs to varying degrees. Trail hiking, berry and mushroom picking and wildlife viewing/sight seeing also occurs.

There are no Forest Service Recreation Sites in the Spuzzum LU, and no development plans for the immediate future. There are no provincial parks or other protected areas within the Spuzzum LU.

3.0 Spuzzum Landscape Unit Objectives

Legal objectives established under the Landscape Unit plan are Higher Level Plan objectives. In part of the Spuzzum LU the Spotted Owl Management Plan has been approved and is also being considered for Higher Level Plan status with legal objectives. Objectives from both processes are intended to be compatible to the greatest extent possible.

The Spuzzum LU was ranked as a Low biodiversity emphasis option through the biodiversity value ranking process completed earlier (see the *Vancouver Forest Region Landscape Unit Planning Strategy*, 1999). This Low designation along with the BEC variant determines the percentage of the Crown forest land base that will be designated as OGMA. Table 2 outlines the total amount of OGMA required in each variant and from which Crown forest category (i.e. Non Contributing-NC; Timber Harvesting Land Base)[5]. The old growth target figures in Table 2 are derived from Appendix 2 in the *Landscape Unit Planning Guide*.

To ensure that landscape level biodiversity values were represented across the landscape, OGMAs were established to the target in each BEC variant. The attached Spuzzum LU map visually shows their distribution.

Table 2. Old growth management area (OGMA) requirements, Spuzzum Landscape Unit.

BEC Variant & Natural Disturbance Type	1/3 OGMA Target*	2/3 OGMA Target*	Full OGMA Target		Estab-lished OGMAs	OGMAs in Non-Contributing (NC)		OGMAs in Partial Contributing (PC)**		OGMAs in Contributing (C)	
	Ha	Ha	%	Ha	Ha	%	Ha	%	Ha	%	Ha
CWHds1, 2	69	140	>9	209	212.0	80.7	171.1	19.3	40.9	0	0
CWHms1, 2	266	532	>9	798	800.6	92.5	740.5	6.4	51.4	1.1	8.7
IDFww, 4	56	112	>13	168	172.4	97.7	168.4	0	0.1	2.3	3.9
MHmm2, 1	156	311	>19	467	470.0	93.5	439.5	6.2	29.0	0.3	1.5
Total	547	1095		1642	1655.0	91.8	1519.5	7.3	121.4	0.8	14.1

Note: Differences in totals are due to rounding.
CWHds1: Coastal Western Hemlock, dry submaritime, southern variant. NDT 2
CWHms1: Coastal Western Hemlock, moist submaritime, southern variant. NDT 2
IDFww: Interior Douglas-fir, wet warm subzone. NDT 4
MHmm2: Mountain Hemlock, moist maritime, leeward variant. NDT 1
A portion of PC and all of C form the Timber Harvesting Land Base (THLB)
*In LUs with Low BEO, 1/3 of the target must met immediately. The remaining 2/3 is established in the non-contributing landbase and is considered recruitment OGMAs (may include younger forests).
** 75.2 ha of the 121.4 ha total in PC are from the THLB. The remaining 46.2 ha are not part of the THLB.

4.0 Spuzzum OGMA Planning Results

4.1 Timber Harvesting Land Base Impact: In the Spuzzum LU, most of the old growth targets are met within the non-contributing land base. In total, 89.3 ha of OGMA are identified in the THLB to meet old growth retention targets. Of this, 75.2 ha are from the partial contributing land base (mainly spotted owl SRMZ) with the majority suggested by licensees. The few hectares of contributing land base are remnants after harvest or were agreed to by licensees (see Table 3 for additional details).

4.2 OGMA Age Classes: In the Spuzzum Landscape Unit there was sufficient old forest in 2 of 4 BEC variants to meet the one-third OGMA targets. Overall, 88% of the initial one-third old growth

[5] Non Contributing (NC) forest land does not contribute to the Allowable Annual Cut. The Timber Harvesting Land Base (THLB) is made up of Contributing (C) forests and a portion of the Partially Contributing (PC) forests. Partially Contributing forests are "constrained" due to one of several factors such as unstable soils or wildlife habitat, but are still partially available for harvest. Contributing forest is unconstrained and available for timber harvest.

requirement is established in old forest. In the lower elevation (CWHds1) and drier (IDFww) variants an old forest shortfall required that age class 8 forest (141-250 years old) be established as OGMAs to complete the one-third requirement.

The remaining two-thirds are established as recruitment OGMAs from a variety of age classes in the non-contributing land base. In the higher elevation variant, MHmm2, most of the recruitment OGMAs are located in mature forests (141-250 years old). However in the mid to lower elevation variants (CWHds1 & CWHms1) recruitment OGMAs are established in younger age class forests (214 ha in 81-140 year old forest, 12 ha in 21-40 year old forest). These were chosen to increase patch size. In the drier IDFww variant, all of the recruitment OGMAs are established in age class 8 forests.

4.3 OGMA Summary: OGMA attributes together with a rationale for selection of OGMAs is described in Table 3 on the following pages.

TABLE 3: Spuzzum Landscape Unit: OGMA Summary and Rationale

OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
1	IDF ww	C	3.7	3.7	large patch, extends into Nahatlatch LU	licensee agreement	west half is DWR (deer winter range)
1	IDF ww	N	52.4	0.0	large patch, extends into Nahatlatch LU		west half is DWR (deer winter range)
1	IDF ww	P	0.1	0.0			west half is DWR (deer winter range)
2	CWH ms 1	N	14.2	0.0	2, 9, 12 combine for lrgr complex	FDP block adjacent on S side	DWR values
3	CWH ms 1	N	4.9	0.0		FDP block adjacent on S side	
3	CWH ms 1	P	1.1	0.1		FDP block adjacent on S side	
3	IDF ww	N	5.0	0.0		FDP block adjacent on S side	
4	CWH ms 1	N	14.1	0.0	adjacent to brush patches	FDP block adjacent on N side	
4	MH mm 2	N	6.7	0.0	adjacent to brush patches	FDP block adjacent on N side	
5	CWH ms 1	N	5.9	0.0	remnant after harvest		
6	CWH ms 1	C	0.5	0.5	upland forest		
6	CWH ms 1	N	13.4	0.0	upland forest		
6	MH mm 2	N	1.4	0.0	shown as ATp on map		
6	MH mm 2	N	28.6	0.0	upland forest		
6	MH mm 2	P	0.5	0.0	upland forest		
7	IDF ww	N	70.2	0.0	large patch	FDP block adjacent on W, NW sides	mostly DWR
8	CWH ms 1	N	46.3	0.0	large patch, riparian to upland link		
8	MH mm 2	N	4.7	0.0	large patch, riparian to upland link		
9	CWH ms 1	C	0.3	0.3	2, 9, 12 combine for lrgr complex	FDP block adjacent on SW side	
9	CWH ms 1	N	15.6	0.0	2, 9, 12 combine for lrgr complex		
9	CWH ms 1	P	0.3	0.0	2, 9, 12 combine for lrgr complex		
10	CWH ms 1	C	0.1	0.1			
10	CWH ms 1	N	5.3	0.0			
10	MH mm 2	N	2.2	0.0			
11	MH mm 2	N	11.8	0.0	does not conflict with Western's blocks		
11	MH mm 2	N	0.4	0.0	shown as ATp on map		
12	CWH ms 1	N	14.7	0.0	2, 9, 12, combine for lrge complex	FDP block adjacent on SE side	
12	CWH ms 1	P	0.2	0.0	2, 9, 12, combine for lrge complex	FDP block adjacent on SE side	
13	CWH ms 1	C	2.5	2.5		recommended by licensee	
13	CWH ms 1	N	6.9	0.0		recommended by licensee	
13	MH mm 2	C	0.3	0.3		recommended by licensee	
13	MH mm 2	N	7.0	0.0		recommended by licensee	
14	CWH ms 1	N	7.3	0.0		recommended by licensee	
14	MH mm 2	N	4.3	0.0			
15	CWH ms 1	C	0.3	0.3	does not conflict with Western's blocks		

*spow LTOH: spotted owl long term owl habitat

**spow FMA: spotted owl forest management area

TABLE 3: Spuzzum Landscape Unit: OGMA Summary and Rationale

OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
15	CWH ms 1	N	6.8	0.0	does not conflict with Western's blocks		
15	MH mm 2	N	4.0	0.0	does not conflict with Western's blocks		
16	MH mm 2	N	7.4	0.0			
17	CWH ms 1	N	7.9	0.0	riparian gully	FDP block adjacent on W side	
17	CWH ms 1	P	0.5	0.0	riparian gully	FDP block adjacent on W side	
20	CWH ms 1	N	10.6	0.0			
20	MH mm 2	N	2.6	0.0			
21	CWH ms 1	N	1.3	0.0		FDP block adjacent on N side	
21	MH mm 2	N	4.0	0.0		FDP block adjacent on N side	
22	CWH ms 1	C	0.2	0.2			
22	CWH ms 1	N	4.7	0.0			
22	MH mm 2	N	0.3	0.0			
24	CWH ms 1	N	5.9	0.0	part riparian gully		
24	MH mm 2	N	2.0	0.0	part riparian gully		
25	CWH ms 1	N	0.8	0.0		FDP block adjacent on E & S side	some DWR value
25	IDF ww	C	0.2	0.2		FDP block adjacent on E & S side	some DWR value
25	IDF ww	N	30.2	0.0		FDP block adjacent on E & S side	some DWR value
26	MH mm 2	N	2.8	0.0	remnant after harvest		MGWR
26	MH mm 2	N	0.1	0.0	shown as ATp on map		MGWR (mtn goat winter range)
27	CWH ms 1	N	3.4	0.0	remnant after harvest		
29	CWH ds 1	N	105.8	0.0	age class 5, recruitment OGMA		part DWR, spow LTOH *
29	CWH ds 1	P	0.1	0.1	large patch, interior forest, riparian to upland		part DWR, spow LTOH
29	CWH ms 1	N	159.2	0.0	large patch, interior forest, riparian to upland		part DWR, spow LTOH
29	MH mm 2	N	68.4	0.0	large patch, interior forest, riparian to upland		part DWR, spow LTOH
32	CWH ms 1	N	14.1	0.0	age class 7, recruitment OGMA		part DWR, spow LTOH
32	MH mm 2	N	6.6	0.0	age class 7, recruitment OGMA		part DWR, spow LTOH
33	CWH ds 1	N	7.3	0.0	large patch, forest interior		mostly DWR, spow LTOH
33	CWH ms 1	N	63.7	0.0	large patch, forest interior		mostly DWR, spow LTOH
33	MH mm 2	N	5.8	0.0	large patch, forest interior		mostly DWR, spow LTOH
35	CWH ms 1	C	0.9	0.9	age class 6, recruitment OGMA		
35	CWH ms 1	N	27.8	0.0	age class 6, recruitment OGMA		
35	MH mm 2	N	0.1	0.0	age class 6, recruitment OGMA		
36	MH mm 2	N	6.1	0.0			
37	CWH ms 1	N	7.4	0.0			
37	MH mm 2	N	0.8	0.0			

*spow LTOH: spotted owl long term owl habitat

**spow FMA: spotted owl forest management area

TABLE 3: Spuzzum Landscape Unit: OGMA Summary and Rationale

OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
38	CWH ds 1	P	1.1	1.1	valley bottom riparian		spow LTOH
38	CWH ms 1	P	10.5	10.5	valley bottom riparian		spow LTOH
39	CWH ds 1	N	2.4	0.0	large patch		spow LTOH
39	CWH ds 1	P	39.3	39.3	large patch	req'd for initial 1/3 OGMA	spow LTOH
39	CWH ms 1	N	9.6	0.0	large patch		spow LTOH
39	CWH ms 1	P	28.1	20.1	large patch	req'd for initial 1/3 OGMA	spow LTOH
39	MH mm 2	N	0.3	0.0	large patch		spow LTOH
39	MH mm 2	P	0.3	0.0	large patch		spow LTOH
40	CWH ms 1	N	5.3	0.0			
41	CWH ds 1	N	10.5	0.0	valley bottom riparian		spow LTOH
43	MH mm 2	N	12.9	0.0	high elev. riparian		partly MGWR
44	CWH ms 1	N	4.7	0.0			avalanche chutes adjacent
45	CWH ms 1	N	81.1	0.0	large patch, forest interior		MGWR, small part DWR
45	MH mm 2	N	6.8	0.0	large patch, forest interior		MGWR
47	CWH ds 1	N	45.2	0.0	some riparian values		part DWR, spow FMA** and LTOH
47	CWH ds 1	P	0.5	0.1	some riparian values		part DWR, spow FMA and LTOH
49	CWH ms 1	N	2.1	0.0			
50	CWH ms 1	N	21.1	0.0	large patch, riparian to upland link		spow LTOH
50	MH mm 2	N	8.1	0.0	shown as ATp on map		partly spow LTOH
50	MH mm 2	N	53.1	0.0	large patch, riparian to upland link		spow LTOH
51	CWH ms 1	N	11.4	0.0			partly MGWR
52	CWH ms 1	C	0.1	0.1	high elev. riparian		
52	CWH ms 1	N	6.6	0.0	high elev. riparian		
52	MH mm 2	N	31.1	0.0	high elev. riparian		
52	MH mm 2	N	0.7	0.0	shown as ATp on map		
54	CWH ms 1	N	1.8	0.0	combines with 56 for larger patch		part spow FMA
54	MH mm 2	N	29.2	0.0	combines with 56 for larger patch		part spow FMA
54	MH mm 2	N	2.2	0.0	shown as ATp on map		part spow FMA
56	CWH ms 1	C	2.7	2.7	combines with 54 for larger patch	licensee recommended	spow FMA
56	CWH ms 1	N	0.5	0.0	combines with 54 for larger patch		spow FMA
56	CWH ms 1	P	10.6	1.1	combines with 54 for larger patch	licensee recommended	spow FMA
56	MH mm 2	C	1.1	1.1	combines with 54 for larger patch	licensee recommended	spow FMA
56	MH mm 2	N	16.4	0.0	combines with 54 for larger patch		spow FMA
56	MH mm 2	P	28.2	2.8	combines with 54 for larger patch	licensee recommended	spow FMA
57	CWH ms 1	N	51.9	0.0	large patch		

*spow LTOH: spotted owl long term owl habitat
**spow FMA: spotted owl forest management area

TABLE 3: Spuzzum Landscape Unit: OGMA Summary and Rationale

OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
58	CWH ms 1	N	2.7	0.0			MGWR
58	MH mm 2	N	7.2	0.0			partly MGWR
59	CWH ms 1	N	6.2	0.0	large patch, comb with 60 for lrgr complex		
59	MH mm 2	N	27.7	0.0	large patch, comb with 60 for lrgr complex		
59	MH mm 2	N	14.9	0.0	shown as ATp on map, but is forested		
60	CWH ms 1	C	0.2	0.2	comb with 59 for lrgr complex		
60	CWH ms 1	N	10.9	0.0	comb with 59 for lrgr complex		
60	MH mm 2	N	21.1	0.0	comb with 59 for lrgr complex		
61	CWH ms 1	N	6.6	0.0	comb with 64 to improve value		
61	MH mm 2	C	0.1	0.1	comb with 64 to improve value		
61	MH mm 2	N	4.9	0.0	comb with 64 to improve value		
62	CWH ms 1	N	8.1	0.0	possible link to Big Silver LU for larger patch		
63	CWH ms 1	C	0.9	0.9	remnant after harvest		
63	CWH ms 1	N	13.7	0.0			avalanche chutes adjacent
63	MH mm 2	N	4.7	0.0			avalanche chutes adjacent
64	CWH ms 1	N	0.9	0.0	comb with 61 to improve value		avalanche chutes adjacent
64	MH mm 2	N	2.8	0.0	comb with 61 to improve value		avalanche chutes adjacent
66	CWH ms 1	N	6.4	0.0	comb with 68 to improve value		mostly MGWR
66	MH mm 2	N	0.1	0.0	comb with 68 to improve value		mostly MGWR
67	CWH ms 1	N	0.4	0.0			
67	MH mm 2	N	9.6	0.0			
68	CWH ms 1	N	15.5	0.0	comb with 66 to improve value		
69	CWH ms 1	N	7.3	0.0	comb with 70 and 71 to improve value		avalanche chutes adjacent
70	CWH ms 1	N	2.0	0.0	comb with 69 and 71 to improve value		avalanche chutes adjacent
71	CWH ms 1	N	1.3	0.0	comb with 69 and 70 to improve value		avalanche chutes adjacent
71	MH mm 2	N	0.7	0.0	comb with 69 and 70 to improve value		avalanche chutes adjacent
72	MH mm 2	N	6.8	0.0	remnant after harvest, high elev. Riparian		
74	IDF ww	N	10.6	0.0		lic. recommended, to replace harvest in #25	

*spow LTOH: spotted owl long term owl habitat
**spow FMA: spotted owl forest management area

Appendix 2 – Ainslie Landscape Unit

1.0 Ainslie Landscape Unit Description

The Ainslie LU covers a total area of 38889 ha and includes the entire Ainslie Creek, Mowhokam Creek and Stoyoma Creek watersheds. All three stream systems are considered medium sized watersheds and flow into the Fraser River north of Boston Bar. Of the total area, 26226 ha (67.4%) is within the Crown forest land base, and 14763 ha of Crown forest land is included in the Timber Harvesting Land Base (THLB). The remaining 12663 ha (32.6%) are non-forested or non-Crown (e.g. rock, alpine tundra, water, private land) and have been excluded from any OGMA contributions and calculations.

The Ainslie LU is situated within the Southern Interior Ecoprovince in the Leeward Pacific Ranges Ecosection. The LU is comprised of 8 Biogeoclimatic Ecosystem Classification (BEC) subzones/variants ranging from low elevation Interior Douglas-fir adjacent to the Fraser River canyon to high elevation Alpine Tundra. Two of the BEC variants are represented in very small portions and do not contain any THLB. The 8 variants represent 4 Natural Disturbance Types (NDT)[6]. Approximately half of the Ainslie LU is in NDT 2, 35% in NDT 4, about 14% in NDT 5 and less than 1% in NDT 3.

The Ainslie LU has sustained significant levels of disturbance. Much of the lower elevation productive and gentle terrain sites have been disturbed by past forest harvesting, fire or other events. The low level of old seral forest within the Ainslie LU reflects this long disturbance history. Substantial amounts of area with unstable soils and steep slopes also exist with varying degrees of natural and human induced slumping.

Major habitat types present in the Ainslie LU include: upland forest, riparian forest, wetlands, small lakes, steep partly forested rocky slopes, sub-alpine forest, and alpine; all of which contribute to the area's complexity. The wildlife and biodiversity values of the Ainslie LU are significant in a District context.

2.0 Significant Resource Values

The Ainslie LUs biodiversity values, proximity to the sawmill in Boston Bar, together with the Nlaka'pamux First Nation, the Trans-Canada highway and associated communities, has a substantial effect on the relative values of the LUs resources and corresponding management strategies. The Landscape Unit supports a wide range of natural resource values and features, as well as a diversity of social and cultural values and influences. These factors, in combination with an extensive forest road network add complexity to resource management in this area.

2.1 Fish, Wildlife and Biodiversity: Wildlife resources of primary management concern in the Ainslie LU include: grizzly bear, spotted owl, mule deer, fish and some species at risk that are considered "Identified

[6] NDT 2 includes those ecosystems with infrequent stand-initiating events. NDT 3 ecosystems are those with frequent stand-initiating events. NDT 4 includes those ecosystems with frequent stand-maintaining fires. NDT 5 are ecosystems like Alpine Tundra and Subalpine Parkland. For a more complete description of NDTs see the *Biodiversity Guidebook* (1995).

Wildlife"[7]. Many other species occur including various forest birds, raptors, small mammals, amphibians and furbearers but their habitat requirements are generally managed within habitat provisions for primary species. For example, habitat for mule deer in the Ainslie LU covers approximately 1756 ha (Classic, Crown forest only) as identified by Ministry of Environment, Lands and Parks (MELP, now called MWLAP). All or a portion of this area is being considered for legal establishment as Ungulate Winter Range (UWR) under the FPC according to a Deer Winter Range Management Plan (Freeman, 2001). In addition, the Spotted Owl Management Plan states that spotted owls, known to occur in two locations in this LU, are to be maintained by providing habitat in OGMAs. Some of the UWR overlaps with Spotted Owl SRMZ and some of both species' habitats have been captured in OGMA. These forested habitats would also benefit other forest dependent species.

Further, most of Ainslie and Mowhokam Creeks support resident salmonid populations. Riparian reserve zones established (as per the FPC) adjacent to these fish streams will help maintain fish and wildlife habitat. Where riparian areas have been logged, habitat will be provided in the future as it re-grows. Since Stoyoma Creek is a Community Watershed, all streams larger than 1.5 m wide are managed with a riparian reserve zone, thereby providing riparian forest habitat as well.

Grizzly bears in the Ainslie LU are within the threatened North Cascades grizzly bear population unit for which a Recovery Plan has been drafted. Implementation is expected to occur following public consultation, plan revisions and subsequent approval by government. Grizzly bears are also considered an Identified Wildlife species. Provisions exist to protect some critical foraging or security habitat within Wildlife Habitat Areas (WHA); designation of WHAs may occur as part of the Recovery Plan. Other species of Identified Wildlife (e.g. northern goshawk, tailed frog) that may be discovered in future may receive habitat protection within WHAs as well. In turn, these WHAs will help provide habitat for species not actively managed for.

Fish and wildlife inventories have been completed in the landscape unit for several reasons. A wildlife inventory was completed in South Ainslie Creek (Freeman & Wright 1998) as part of a Total Resource Plan process; fisheries inventory as part of the same plan was also completed (Scott Resource Services, 1995). In addition, mule deer radio telemetry inventory in Mowhokam and Ainslie watersheds was undertaken over three years to determine habitat used by mule deer primarily during winter (Freeman, 1998). In 1999, MELP district staff also conducted mountain goat winter range inventory in the LU (no goat winter range was identified), and participated in developing a more comprehensive Deer Winter Range Management Plan (Freeman, 2001). Historic deer winter range surveys were also completed in Mowhokam Creek (Teskey et. al., 1984). Spotted owl inventory has been conducted periodically since the early 1990s. All inventory efforts have helped identify critical wildlife habitats that have been considered during OGMA delineation.

The LU as a whole has a lengthy harvesting history, however, until recently the small-medium sized South Ainslie watershed was undeveloped and provided a large unroaded, contiguous habitat patch that contributed significantly to maintaining landscape level biodiversity in the landscape unit. Forest operations began in 1997 when the valley was first roaded, and a major portion of the watershed has been logged in a short time period. The state of South Ainslie Creek prior to harvesting influenced biodiversity ranking for the Ainslie LU.

[7] Volume 1 of the *Identified Wildlife Management Strategy* includes a list of 36 wildlife species and 4 plant communities that are considered to be at risk. These species or plant communities require special management of critical habitat to maintain or restore populations or distributions. Critical habitat is protected within Wildlife Habitat Areas. See the *Identified Wildlife Management Strategy Volume 1 February 1999* for more information.

2.2 Timber Resources: The presence of a substantial timber harvesting land base establishes the importance of timber resource values. Continued access to commercially valuable timber, including future second growth, is a significant concern. Forest roads also provide access into other watersheds (e.g. Siska Creek) for harvesting purposes.

Commercially valuable tree species in the Ainslie LU include Douglas-fir at the lower to mid elevations, sub-alpine fir which ranges from low to high elevation, and smaller components of spruce, lodgepole pine, and hemlock. Deciduous species are scattered throughout the landscape unit. Based on forest cover information, Table 1 shows the age composition of forests in the Ainslie LU.

Table 1. Age distribution of forests within the Ainslie Landscape Unit.

Age	% of Crown Forested Landbase
0-60	39%
61-140	19%
141-250	38%
251+	4%

Due to the transitional ecology of this area, forests range from low to moderate site productivity.

Two forest licensees operate in the Ainslie Landscape Unit. Teal Cedar Products Ltd., formerly J.S. Jones Timber Ltd., operates in the Mowhokam and Ainslie drainages. Timber is trucked to their sawmill in Boston Bar where it is processed further. The BC Timber Sales (BCTS) program, operated by the Ministry of Forests, manages the forestry operations in the Stoyoma drainage. Timber sales issued by BCTS are sold to registered small business operators.

Forest management activities occur throughout all phases of forest development. Operational work includes pre-harvest planning, harvesting and stand regeneration. Post harvest activities include planting, brushing, juvenile spacing, pruning and thinning.

2.3 Private Land: Although only small parcels of private land occur within the Ainslie LU, mainly adjacent to the western boundary along the Trans-Canada highway and around Fishblue Lake, they remain an important consideration when establishing OGMAs. Some of the private land has been altered from its natural state and this change may influence the ecology of adjacent Crown forest lands. Where private and Crown land interfaced, these factors were considered during OGMA delineation.

2.4 First Nations: The Ainslie LU is located within the traditional territory of the Nlaka'pamux First Nation (NNTC). Bands that are part of the NNTC in the Fraser Canyon are Boston Bar, Boothroyd and Spuzzum. There is evidence of traditional use in many areas near the Fraser River canyon and extending inland along trail systems. Culturally modified trees have also been previously identified in some forested areas. Several Indian Reserves are situated near the western edge of the Ainslie LU along the Fraser River.

Between 1997 and 1999, an Archaeological Overview Assessment model was developed by MOF to indicate where archaeological sites are most likely located. This was done to minimize potential impacts by forestry operations on culturally important areas. The model was useful in predicting the location of habitation sites and high elevation campsites in the sub-alpine. Travel routes were also identified.

The maps produced from the model were reviewed to determine if archaeological potential sites and travel routes were captured in OGMAs. In the Ainslie LU, potential archaeological sites located in valley bottom areas (riparian) and mid slope were included in OGMAs when there were old or mature forests in the same locations. Small sections of trails were captured in OGMAs when they overlapped with areas of old forest usually along mid to upper slopes.

2.5 Mining and Mineral Exploration: Subsurface resources (minerals, coal, oil, gas and geothermal) and aggregate resources are significant to the province. In this landscape unit there are 4 mineral showings; 2 placer tenures and 1 placer lease on the Fraser River; and 2 mineral tenures near Boston Bar. OGMAs have avoided these areas wherever possible.

It is important to note that establishment of old growth management areas will not impact the status of existing mineral, aggregate and gas permits or tenures; exploration and development activities are permitted. The preference is to proceed with exploration and development in a way that is sensitive to the old growth forest attributes of the OGMA; however if exploration and development proceeds to the point of significantly impacting old growth values, then the OGMA will be relocated.

2.6 Recreation: The extensive forest road network has increased recreational opportunities for the public. Recreational fishing is provided in Fishblue Lake, with access provided through a privately owned lodge. Stream angling is limited since stream resident fish are quite small. Recreational hunting in the Ainslie LU is an important annual activity enjoyed by many outdoor enthusiasts; most hunters would target deer and black bears. Winter recreational activity is normally restricted by seasonal road deactivation and snow accumulation, although snowmobiling could occur on road systems or alpine areas. ATV, motorcycle and four wheel drive use of roads for recreation occurs to varying degrees. Trail hiking, berry and mushroom picking and wildlife viewing/sight seeing also occurs. There are no Forest Service Recreation Sites in the Ainslie LU and no plans to develop any for the immediate future.

There are no provincial parks within the landscape unit but there is one small Ecological Reserve in Stoyoma Creek, which contains some mature forest that contributes to old forest requirements.

3.0 Ainslie Landscape Unit Objectives

The Ainslie LU was ranked as High biodiversity emphasis option through the biodiversity value ranking process completed earlier (see the *Vancouver Forest Region Landscape Unit Planning Strategy*, 1999). This High designation along with the BEC variant determines the percentage of the landscape unit's Crown forest land base that will be designated as OGMA. Table 2 outlines the total amount of OGMA required in each variant and from which Crown forest category (i.e. Non Contributing-NC; Timber Harvesting Land Base)[8]. The old growth target figures in Table 2 are derived from Appendix 2 in the *Landscape Unit Planning Guide*.

To address the Spotted Owl Management Plan recommendation for maintaining owl habitat in Ainslie LU through landscape unit planning, OGMAs were congregated in the spotted owl activity centres to the extent possible (i.e. as per LUPG rules). OGMAs were chosen to maximize their suitability for spotted owl habitat while ensuring consistency with current forest policy. The most northerly activity centre received better representation in OGMA because surrounding forest land was mostly non-contributing. Owl habitat in the other activity centre could not be adequately maintained through OGMA placement because of target limitations, less non-contributing forest and FDP cutblocks.

Table 2. Old growth management area (OGMA) requirements, Ainslie Landscape Unit.

BEC Variant & Natural Disturbance Type	Old Growth Target		Estab-lished OGMAs	OGMAs in Non-Contributing (NC)		OGMAs in Partial Contributing (PC)*		OGMAs in Contributing (C)		Old forest contribution from Parks or Protected Areas	
	%	Ha	Ha	%	Ha	%	Ha	%	Ha	%	Ha
CWHds1, 2	>13	75	80.9	49.7	40.2	6.0	4.9	44.4	35.9	0	0
CWHms1, 2	>13	376	371.3	40.7	151.3	9.8	36.5	34.3	127.5	15.1	56.0
ESSFdc2, 3	>21	8	8.2	100	8.2	0	0	0	0	0	0
ESSFmw, 2	>13	1722	1728.0	72.9	1259.4	6.0	104.4	20.9	361.5	0.2	2.7
IDFdk2, 4	>19	19	21.4	100	21.4	0	0	0	0	0	0
IDFww, 4	>19	1779	1784.4	64.2	1146.3	22.5	401.1	13.3	236.6	0	0.4
Total		3979	3994.3	65.8	2626.8	13.7	546.9	19.1	761.4	1.5	59.2

Note: Differences in totals are due to rounding.
CWHds1: Coastal Western Hemlock, dry submaritime, southern variant. NDT 2
CWHms1: Coastal Western Hemlock, moist submaritime, southern variant. NDT 2
ESSFmw: Engelmann Spruce-Subalpine Fir, moist warm subzone. NDT 2
ESSFdc2: Engelmann Spruce-Subalpine Fir, dry cold, Thompson variant. NDT 3
IDFdk2: Interior Douglas-fir, dry cool, Cascade variant. NDT 4
IDFww: Interior Douglas-fir, wet warm subzone. NDT 4
A portion of PC and all of C form the Timber Harvesting Land Base (THLB).
* 54.7 ha of the 546.9 ha total in PC are considered part of the THLB. The remaining 492.2 ha are not part of the THLB.

To ensure that landscape level biodiversity values were represented across the landscape, OGMAs were established to the target in each BEC variant. The only exception to this occurs between the CWHds1 and

[8] NC forest land does not contribute to the Allowable Annual Cut. The Timber Harvesting Land Base (THLB) is made up of Contributing forests (C) and a portion of the Partially Contributing (PC) forests. Partially Contributing forests are "constrained" due to one or more of several factors such as poor soils or wildlife habitat, but are still partially available for harvest. Contributing forest is unconstrained and available for timber harvest.

CWHms1, where the latter is 5 ha under represented and the former 6 ha over represented as compensation. The attached Ainslie LU map visually shows their distribution.

4.0 Ainslie OGMA Planning Results

4.1 Timber Harvesting Land Base Impact: After considering existing constraints to the land base and their contribution to OGMAs, 816 ha from the THLB was identified as OGMA to achieve old growth retention targets. Of this total, 761 ha are from the Contributing land base. Some of the THLB areas captured in OGMA were considered inoperable by licensees or were remnants after logging (see Table 3 for additional details). Other contributing areas represent riparian reserve zones that are in fact unavailable for harvest. In all situations licensees were made aware of OGMA locations within the THLB. Licensee concerns were addressed wherever possible.

4.2 OGMA Age Classes: In the Ainslie Landscape Unit there was insufficient old forest (250+ years) in all BEC variants to meet OGMA targets. Therefore, it was necessary to designate mature stands as recruitment OGMAs. Approximately 16% of OGMAs were established within forests greater than 250 years old with another 80% established from mature stands between 141 and 250 years old. Most of the remaining 4% were located in stands aged 101 to 140 years in the IDFww due to a shortage of forest older than 140 years. The younger forests were chosen because of higher resource values (deer winter range, spotted owl).

4.3 OGMA Summary: OGMA attributes together with a rationale for selection of OGMAs is described in Table 3 on the following pages.

TABLE 3:

Ainslie Landscape Unit: OGMA Summary and Rationale

OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
2	ESSFdc 2	N	8.2	0.0	small wetland adjacent, field checked		
2	ESSFmw	N	5.0	0.0	small wetland adjacent, field checked		
4	ESSFmw	C	5.8	5.8	large patch, forest interior		spatially important
4	ESSFmw	N	137.0	0.0	large patch, forest interior		spatially important
7	ESSFmw	C	0.3	0.3	large patch, forest interior, some recruitment	licensee agreement	
7	ESSFmw	N	109.6	0.0	large patch, forest interior, part field checked	licensee agreement	
8	CWH ms 1	N	5.9	0.0	field checked		
8	ESSFmw	N	0.2	0.0	field checked		
9	ESSFmw	N	4.5	0.0			
10	CWH ms 1	C	9.0	9.0	valley bottom to upland link, field checked	required for old forest, no other options	
10	CWH ms 1	N	5.2	0.0	valley bottom to upland link, field checked		
11	ESSFmw	N	20.3	0.0		licensee agreement	
12	CWH ms1	C	1.2	1.2	field checked, riparian, remnant after harvest		
12	CWH ms 1	N	3.8	0.0	field checked, riparian, remnant after harvest		
13	CWH ds 1	N	5.7	0.0	large patch, forest interior		
13	CWH ms 1	N	13.9	0.0	large patch, forest interior		
13	ESSFmw	N	78.9	0.0	large patch, forest interior		
15	CWH ms 1	C	22.2	22.2		required for old forest, no other options	
15	CWH ms 1	N	0.9	0.0			
16	CWH ds 1	C	1.5	1.5	valley bottom riparian, field checked		spotted owl activity center
16	CWH ms 1	C	5.8	5.8	valley bottom riparian, field checked		spotted owl activity center
17	CWH ds 1	N	4.3	0.0	riparian gully	FDP block adjacent on S side	spotted owl activity center
17	ESSFmw	N	1.2	0.0	riparian gully	FDP block adjacent on S side	spotted owl activity center
18	ESSFmw	C	0.6	0.6	large patch, some forest interior habitat	FDP block adjacent on S & N sides	spotted owl activity center
18	ESSFmw	N	150.4	0.0	large patch, some forest interior habitat	FDP block adjacent on S & N sides	spotted owl activity center
18	ESSFmw	P	0.3	0.0	large patch, some forest interior habitat	FDP block adjacent on S & N sides	spotted owl activity center
18	IDF ww	C	0.1	0.1	large patch, some forest interior habitat	FDP block adjacent on S & N sides	spotted owl activity center
18	IDF ww	N	4.2	0.0	large patch, some forest interior habitat	FDP block adjacent on S & N sides	spotted owl activity center
19	ESSFmw	N	260.6	0.0	large patch, wetland, riparian, forest interior		some grizzly bear values
19	ESSFmw	N	0.5	0.0	shown as ATp on map, but is forested		some grizzly bear values
20	ESSFmw	N	11.9	0.0			
21	CWH ms 1	N	11.3	0.0			
21	ESSFmw	N	10.0	0.0			
22	CWH ds 1	C	2.0	2.0			

TABLE 3:

Ainslie Landscape Unit: OGMA Summary and Rationale

OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
22	CWH ms 1	C	1.7	1.7			
23	CWH ds 1	C	32.4	32.4	valley bottom riparian, field checked		spotted owl activity center
23	CWH ds 1	N	23.8	0.0	valley bottom riparian, field checked		spotted owl activity center
23	CWH ds 1	P	3.9	0.4	valley bottom riparian, field checked		spotted owl activity center
23	IDF ww	C	0.4	0.4	valley bottom riparian, field checked		spotted owl activity center
23	IDF ww	N	0.7	0.0	valley bottom riparian, field checked		spotted owl activity center
24	ESSFmw	N	20.3	0.0			partial spotted owl activity center
24	IDF ww	N	9.4	0.0			partial spotted owl activity center
25	ESSFmw	N	6.6	0.0	remnant after harvest/fire		
27	IDF dk 2	N	20.1	0.0	large patch, riparian to upland link		spotted owl activity center
27	IDF ww	N	70.3	0.0	large patch, riparian to upland link		spotted owl activity center
28	ESSFmw	C	0.5	0.5		FDP block adjacent on N side, proposed road	
28	ESSFmw	N	11.7	0.0		FDP block adjacent on N side, proposed road	
30	ESSFmw	N	16.8	0.0		FDP block adjacent on SW and NE sides	spotted owl activity center
31	ESSFmw	N	24.7	0.0	steep slope		spotted owl AC
31	IDF ww	N	16.1	0.0	steep slope		spotted owl AC
32	ESSFmw	N	2.5	0.0	adjacent to #35, remnant after fire		spotted owl AC
32	IDF ww	N	3.6	0.0	adjacent to #35, remnant after fire		spotted owl AC
33	ESSFmw	N	12.3	0.0	remnant after harvest/fire		partial spotted owl AC
33	IDF ww	N	5.2	0.0	remnant after harvest/fire		partial spotted owl AC
35	ESSFmw	N	0.1	0.0	combines with #38, #39 same comments		combines with #38, spotted owl AC
35	IDF ww	N	12.9	0.0	combines with #38, #39 same comments		combines with #38, spotted owl AC
36	IDF ww	N	2.3	0.0	links to OGMA #27		spotted owl activity center
37	ESSFmw	N	2.5	0.0	surrounded by brush or NP slide		spotted owl activity center
37	IDF ww	N	0.5	0.0	surrounded by brush or NP slide		spotted owl activity center
38	CWH ds 1	P	1.0	0.1	large patch, riparian, part field checked		spotted owl activity center, part DWR
38	IDF ww	C	106.9	106.9	large patch, riparian, part field checked		spotted owl activity center, part DWR
38	IDF ww	N	215.8	0.0	large patch, riparian, part field checked		spotted owl activity center, part DWR
38	IDF ww	P	240.9	24.1	large patch, riparian, part field checked		spotted owl activity center, part DWR
39	IDF ww	N	13.7	0.0	combines with #38, #35 same comments		spotted owl activity center
40	IDF ww	N	11.4	0.0			spotted owl act center, DWR
42	IDF ww	N	24.0	0.0	slide and rock surrounds patch		spotted owl activity center
47	ESSFmw	N	67.7	0.0	large patch		
49	IDF ww	N	89.6	0.0	large patch, excluded area is sparsely treed		spotted owl act center, small part DWR

TABLE 3:

Ainslie Landscape Unit: OGMA Summary and Rationale

OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
54	IDF ww	N	17.7	0.0			DWR
58	IDF dk 2	N	1.3	0.0	riparian gully		
58	IDF ww	N	35.8	0.0	riparian gully		
59	ESSFmw	N	25.1	0.0	links to OGMA #47, remnant after fire		
64	ESSFmw	N	23.4	0.0			
65	CWH ms 1	C	11.1	11.1	riparian, remnant after harvest		spotted owl activity center
65	CWH ms 1	P	2.6	0.3	riparian, remnant after harvest		spotted owl activity center
66	ESSFmw	N	12.3	0.0			partial spotted owl act center
66	IDF ww	N	42.1	0.0			partial spotted owl act center
66	IDF ww	P	7.0	0.7			partial spotted owl act center
68	CWH ms 1	C	22.7	22.7	riparian, creek confluence		spotted owl activity center
69	ESSFmw	C	0.8	0.8	riparian		partial spotted owl act center
69	ESSFmw	N	34.2	0.0	riparian		partial spotted owl act center
70	IDF ww	N	85.9	0.0	riparian to upland link, large patch	FDP block adjacent	DWR, spotted owl act center
70	CWH ms 1	C	39.1	39.1	riparian to upland link, large patch		
70	CWH ms 1	N	31.0	0.0	riparian to upland link, large patch		
70	CWH ms 1	P	17.8	1.8	riparian to upland link, large patch		
70	ESSFmw	C	3.9	3.9	riparian to upland link, large patch		
70	ESSFmw	N	12.9	0.0	riparian to upland link, large patch		
70	IDF ww	P	45.2	4.5	riparian to upland link, large patch		
72	IDF ww	P	13.6	1.4			DWR
73	ESSFmw	C	18.4	18.4	riparian		suitable grizzly habitat, spotted owl act center
74	ESSFmw	P	2.6	0.3	open stocking	FDP block adjacent	partial spotted owl act center
74	IDF ww	P	16.2	1.6	open stocking	FDP block adjacent	partial spotted owl act center
76	ESSFmw	C	90.9	90.9	large patch, wetland, riparian, forest interior	FDP block adjacent on N side	suitable grizzly habitat
76	ESSFmw	N	24.5	0.0	large patch, wetland, riparian, forest interior	FDP block adjacent on N side	suitable grizzly habitat
76	ESSFmw	P	17.6	1.8	large patch, wetland, riparian, forest interior	FDP block adjacent on N side	suitable grizzly habitat
76	ESSFmw	N	0.1	0.0	shown as ATp		
76	ESSFmw	P	0.8	0.1	shown as ATp		
80	IDF ww	P	8.6	0.9			spotted owl activity center
84	IDF ww	C	0.1	0.1			DWR south half, spotted owl activity center
84	IDF ww	N	19.4	0.0			DWR south half, spotted owl activity center
84	IDF ww	P	0.7	0.1			DWR south half, spotted owl activity center
86	ESSFmw	N	8.0	0.0	steep riparian gully		

TABLE 3:

Ainslie Landscape Unit: OGMA Summary and Rationale

OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
87	ESSFmw	C	11.4	11.4	riparian, remnant after harvest		
88	ESSFmw	C	18.3	18.3	remnant after harvest/fire		
95	ESSFmw	N	7.0	0.0		FDP block adjacent	
95	ESSFmw	P	0.1	0.0		FDP block adjacent	
97	IDF ww	C	0.9	0.9	riparian		mostly DWR, spotted owl act center
97	IDF ww	N	32.5	0.0	riparian		mostly DWR, spotted owl act center
102	IDF ww	C	21.7	21.7	riparian	licensee agreement, constrained	DWR north side of Ainslie Cr
102	IDF ww	N	133.1	0.0	riparian		DWR north side of Ainslie Cr
102	IDF ww	P	16.0	1.6	riparian	licensee agreement, constrained	DWR north side of Ainslie Cr
103	CWH ms 1	C	1.6	1.6	riparian	inop, licensee recommended	
103	CWH ms 1	P	7.2	0.7	riparian	inop, licensee recommended	
103	ESSFmw	C	71.7	71.7	riparian	inop, licensee recommended	
103	ESSFmw	P	39.0	3.9	riparian	inop, licensee recommended	
103	IDF ww	P	0.1	0.0	riparian	inop, licensee recommended	
104	IDF ww	N	11.8	0.0			DWR
105	ESSFmw	C	1.2	1.2	riparian		
105	ESSFmw	N	14.1	0.0	riparian		
106	CWH ms 1	P	4.5	0.5	riparian		
106	ESSFmw	P	8.1	0.8	riparian		
107	ESSFmw	C	2.4	2.4	riparian		
107	ESSFmw	N	11.1	0.0	riparian		
110	ESSFmw	P	9.0	0.9		FDP block adjacent	
112	IDF ww	P	7.1	0.7	steep riparian gully		
114	ESSFmw	C	4.1	4.1			
114	ESSFmw	N	0.3	0.0			
115	CWH ms 1	C	1.7	1.7	riparian, remnant after fire		proposed Grizzly WHA (foraging)
115	CWH ms 1	N	23.7	0.0	riparian, remnant after fire		proposed Grizzly WHA (foraging)
115	CWH ms 1	P	4.2	0.4	riparian, remnant after fire		proposed Grizzly WHA (foraging)
115	ESSFmw	N	2.8	0.0	riparian, remnant after fire		proposed Grizzly WHA (foraging)
115	IDF ww	C	1.0	1.0	riparian, remnant after fire		proposed Grizzly WHA (foraging)
115	IDF ww	P	0.4	0.0	riparian, remnant after fire		proposed Grizzly WHA (foraging)
116	IDF ww	C	12.8	12.8			DWR in west half
116	IDF ww	N	2.2	0.0			DWR in west half
116	IDF ww	P	6.4	0.6			DWR in west half

TABLE 3:

Ainslie Landscape Unit: OGMA Summary and Rationale

OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
118	IDF ww	N	16.2	0.0	links to OGMA #132		DWR
119	IDF ww	C	0.3	0.3			DWR
119	IDF ww	N	15.7	0.0			DWR
120	IDF ww	N	37.2	0.0	riparian to upland link		DWR
121	CWH ms 1	N	7.3	0.0	partly riparian		
121	CWH ms 1	P	0.1	0.0	partly riparian		
121	IDF ww	N	7.4	0.0	partly riparian		
121	IDF ww	P	2.9	0.3	partly riparian		
122	IDF ww	C	2.1	2.1			DWR
122	IDF ww	N	6.4	0.0			DWR
122	IDF ww	P	5.9	0.6			DWR
123	IDF ww	C	1.4	1.4	riparian to upland link		DWR north side of Stoyoma Cr
123	IDF ww	N	173.7	0.0	riparian to upland link		DWR north side of Stoyoma Cr
123	IDF ww	P	0.4	0.0	riparian to upland link		DWR north side of Stoyoma Cr
123	CWH ms 1	N	73.6	0.0	riparian to upland link, eco reserve	FDP block adjacent	DWR north side of Stoyoma Cr
123	CWH ms 1	C	11.6	11.6	riparian to upland link, eco reserve	inop, licensee recommended	DWR north side of Stoyoma Cr
123	ESSFmw	N	6.6	0.0	riparian to upland link, eco reserve		DWR north side of Stoyoma Cr
124	ESSFmw	C	7.3	7.3	large patch, forest interior	inop, licensee recommended	
124	ESSFmw	N	105.3	0.0	large patch, forest interior		
124	ESSFmw	N	0.6	0.0	shown at ATp on map		
127	ESSFmw	C	4.4	4.4	remnant after fire/harvest		
127	ESSFmw	N	10.9	0.0	remnant after fire/harvest		
128	CWH ms 1	N	3.3	0.0	small patch adjacent to #134 and 129		
129	IDF ww	C	5.3	5.3	CWS	inop, licensee recommended	
129	CWH ms 1	N	5.6	0.0	CWS		DWR
129	IDF ww	N	17.0	0.0	CWS		
130	IDF ww	P	7.8	0.8			DWR
131	CWH ms 1	N	0.8	0.0			small patch adjacent to DWR
131	IDF ww	N	1.3	0.0			small patch adjacent to DWR
132	IDF ww	C	51.0	51.0	select harv '54; stand suitable, lrg patch		
132	IDF ww	N	1.0	0.0	select harv '54; stand suitable, lrg patch		
134	CWH ms 1	N	18.8	0.0			mostly DWR
134	IDF ww	N	3.7	0.0			mostly DWR
134	IDF ww	P	1.6	0.2			mostly DWR

TABLE 3:

Ainslie Landscape Unit: OGMA Summary and Rationale

OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
136	ESSFmw	N	4.3	0.0	mid slope, adj to creek		
136	CWH ds 1	N	6.4	0.0			
137	CWH ms 1	N	2.1	0.0	forms larger patch with #129		
138	IDF ww	N	4.6	0.0	remnant patch after fire		
139	ESSFmw	C	44.4	44.4	headwaters riparian	licensee agreement	some grizzly bear values
139	ESSFmw	N	0.3	0.0	headwaters riparian		some grizzly bear values
140	IDF ww	P	18.4	1.8		licensee recommended	
140	IDF ww	N	2.4	0.0	shown as X but is forested	licensee recommended	
141	IDF ww	C	32.5	32.5	constrained	licensee recommended	DWR
141	IDF ww	P	1.9	0.2	constrained	licensee recommended	DWR
142	ESSFmw	C	75.2	75.2	large patch, forest interior	lic. agreement, requ'd to replace interest area	
142	ESSFmw	N	3.1	0.0	large patch, forest interior	lic. agreement, requ'd to replace interest area	
142	ESSFmw	P	26.8	2.7	large patch, forest interior	lic. agreement, requ'd to replace interest area	

Appendix 3 - Anderson Landscape Unit

1.0 Anderson Landscape Unit Description

The Anderson River together with all its tributary streams is a medium to large sized watershed flowing into the Fraser River just south of Boston Bar. The Anderson LU encompasses a total of 52270 ha and includes the entire Anderson River watershed. Of the total area, 39430 ha (75.4%) is within the Crown forest land base, and 22447 ha of Crown forest land is included in the Timber Harvesting Land Base (THLB). The remaining 12840 ha (24.6%) are non-forested or non-Crown (e.g. rock, alpine tundra, water, private land) and have been excluded from any OGMA contributions and calculations.

The Anderson Landscape Unit is an ecologically transitional area between coastal and interior forests. The north-eastern portion lies within the Southern Interior Ecoprovince in the Leeward Pacific Ranges Ecosection while the remainder is situated within the Coast and Mountains Ecoprovince in the Eastern Pacific Ranges Ecosection. The landscape unit is also quite diverse containing 7 Biogeoclimatic Ecosystem Classification (BEC) subzones/variants ranging from low elevation Interior Douglas-fir adjacent to the Fraser River canyon to high elevation Alpine Tundra further east. These 7 variants represent 4 Natural Disturbance Types (NDTs)[9]. The majority of the Landscape Unit is within NDT 2 (66%), with smaller portions in NDT 1 (13%), NDT 4 (13%), and NDT 5 (8%).

The Anderson has sustained significant levels of disturbance. Much of the lower elevation productive and gentle terrain sites have been disturbed by past forest harvesting, fire or other events. The low level of old seral forest within the Anderson LU reflects this disturbance history.

Major habitat types present in the Anderson LU include: upland forest, riparian forest, small lakes, steep partly forested rocky slopes, sub-alpine forest, and alpine; all of which contribute to the area's complexity. The wildlife and biodiversity values of the Anderson LU are significant in a District context.

2.0 Significant Resource Values

The Anderson's biodiversity values, proximity to the sawmill in Boston Bar, the Nlaka'pamux First Nation, the Trans-Canada highway and associated communities, has a substantial effect on the relative values of the LUs resources and corresponding management strategies. The Landscape Unit supports a wide range of significant natural resource values and features, as well as a diversity of social and cultural values and influences. These factors, in combination with an extensive forest road network add complexity to resource management in this area.

2.1 Fish, Wildlife and Biodiversity: Wildlife resources of primary management concern in the Anderson LU include: grizzly bear, spotted owl, mule deer, fish and some species at risk that are

[9] NDT 1 encompasses those ecosystems with rare stand-initiating events. NDT 2 includes ecosystems with infrequent stand-initiating events. NDT 4 ecosystems are those with frequent stand-maintaining fires. NDT 5 is Alpine Tundra. For a more complete description of NDTs see the *Biodiversity Guidebook* (1995).

considered "Identified Wildlife"[10]. Many other species occur including forest birds, raptors, small mammals, amphibians and furbearers but their habitat requirements are generally managed within habitat provisions provided for primary species. For example, habitat for spotted owls in the Anderson LU is maintained within a Special Resource Management Zone (SRMZ) which covers approximately 17,770 ha of gross forested area. At present, about 64% of this is suitable owl habitat (>100 years old forest) with a requirement to recruit another 456 ha (3%) of suitable owl habitat to reach a total of 67% suitable owl habitat in the SRMZ. This owl habitat would also support other species using old forests.

The Anderson LU is also an important area for mule deer with 2687 ha of deer winter range (Classic, Crown forest only) identified by Ministry of Environment, Lands and Parks (MELP, now called MWLAP). All or a portion of this area is being considered for legal establishment as Ungulate Winter Range (UWR) under the FPC according to a Deer Winter Range Management Plan (Freeman, 2001). Some of the UWR overlaps with Spotted Owl SRMZ and some of both species' habitats have been captured in OGMA. The forested winter range habitat maintained for deer would also benefit other species.

Further, most of the Anderson River and its major tributaries support resident salmonid populations. Riparian reserve zones established (as per the FPC) adjacent to these fish streams will help maintain fish and wildlife habitat. In many instances riparian areas supply habitat for other species, and where riparian areas were previously logged habitat will be provided in the future as it re-grows.

Grizzly bears in the Anderson LU are within the threatened North Cascades grizzly bear population unit for which a Recovery Plan has been drafted. Implementation is expected to occur following public consultation, plan revisions and subsequent approval by government. Grizzly bears are also considered an Identified Wildlife species. Provisions exist to protect some critical foraging or security habitat within Wildlife Habitat Areas (WHA); designation of WHAs may occur as part of the Recovery Plan. Other species of Identified Wildlife (e.g. northern goshawk, tailed frog) that may be discovered later may receive habitat protection with WHAs as well. In turn, these WHAs will help provide habitat for species not actively managed for.

Several fish and wildlife inventories have been undertaken in the landscape unit. In 1999 an FRBC funded reconnaissance level fish and fish habitat inventory was completed (Triton Environmental Consultants, 1999) which confirmed fish presence throughout most of the lower gradient streams in the Anderson River watershed. MELP district staff conducted mountain goat winter range inventory during winter 1998 (no goat winter range was identified), and also participated in developing a more comprehensive Deer Winter Range Management Plan (Freeman, 2001). Historic deer winter range surveys were also completed by previous Habitat Protection staff (Teskey et. al., 1984; Teskey et. al., 1986). Finally, spotted owl inventory efforts have occurred periodically since 1989. All of the inventory efforts have helped to identify critical wildlife habitats that have been considered during OGMA delineation.

[10] Volume 1 of the *Identified Wildlife Management Strategy* includes a list of 36 wildlife species and 4 plant communities that are considered to be at risk. These species or plant communities require special management of critical habitat to maintain or restore populations or distributions. Critical habitat is protected within Wildlife Habitat Areas. See the *Identified Wildlife Management Strategy Volume 1 February 1999* for more information.

2.2 Timber Resources: The presence of a substantial timber harvesting land base establishes the importance of timber resource values. Continued access to commercially valuable timber, including future second growth, is a significant concern. First pass harvesting of accessible old growth timber is nearing completion.

Commercially valuable tree species in the Anderson LU include Douglas-fir at the low to mid elevations and hemlock, lodgepole pine, and Engelmann spruce from the mid to higher elevations. Western red cedar and sub-alpine fir occur at all elevations within the harvestable land base. Scattered deciduous stands occur throughout the Anderson drainage. Based on forest cover information, Table 1 shows the age composition of forests in the Anderson LU.

Table 1. Age distribution of forests within the Anderson Landscape Unit.

Age	% of Crown Forested Landbase
0-60	34%
61-140	24%
141-250	35%
251+	6%

Since the forests in the Anderson LU are in a coastal/interior transitional area, site productivity ranges from low to moderate.

There are currently four licensees that have forest tenures in this landscape unit. Teal Cedar Products Ltd, formerly J.S. Jones Timber Ltd., operates in the Uztlius and East Anderson drainages. Timber from this area is processed at their sawmill in Boston Bar. Cattermole Timber operates in the south fork of the Anderson drainage. Timber harvested by Cattermole is generally sold to other companies through various methods. The Small Business Forest Enterprise program managed by the Ministry of Forests harvests in the west area of the Anderson drainage. The Nlaka'pamux First Nation (NNTC) and Teal Cedar Products Ltd. operate a joint forest license on the east slope of the Fraser Canyon.

Forest management activities occur throughout all phases of forest development. Operational work includes pre-harvest planning, harvesting and stand regeneration. Post harvest activities include planting, brushing, juvenile spacing, pruning and thinning.

2.3 Private Land: Although only small parcels of private land occur within the Anderson LU, mainly adjacent to the western boundary along the Trans-Canada highway, they remain an important consideration when establishing OGMAs. Some of the private land has been altered from its natural state and this change may influence the ecology of adjacent Crown forest lands. Where private and Crown land interfaced, these factors were considered during OGMA delineation.

2.4 First Nations: The Anderson LU is located within the traditional territory of the Nlaka'pamux First Nation. Bands that are part of the NNTC in the Fraser Canyon are Spuzzum, Boston Bar and Boothroyd.

There is evidence of traditional use in many areas near the Fraser River canyon and trail systems extend into some of the Anderson River valleys. Culturally modified trees have been previously identified in some forested areas. Several Indian Reserves are situated near the Fraser River.

Between 1997 and 1999, an Archaeological Overview Assessment model was developed by MOF to indicate where archaeological sites are most likely located. This was done to minimize potential impacts by forestry operations on culturally important areas. The model was useful in predicting the location of habitation sites and high elevation campsites in the sub-alpine. Travel routes were also identified.

The maps produced from the model were reviewed to determine if archaeological potential sites and travel routes were captured in OGMAs. In the Anderson LU, sections of travel routes were captured in OGMAs when they overlapped with areas of old forest usually along mid slopes. Potential archaeological sites located in valley bottom areas (riparian) were also included in OGMAs when there were old or mature forests in the same locations.

2.5 Mining and Mineral Exploration: Subsurface resources (minerals, coal, oil, gas and geothermal) and aggregate resources are significant to the province. In this landscape unit there are currently 5 placer tenures on the Fraser River and 4 mineral tenures near Anderson River Mountain. There is also 1 producing granite quarry on the East Anderson River. The East Anderson River quarry is operated by Quarry Pacific Industries which produces stone blocks used for tile production in Surrey. OGMAs have been located to avoid existing tenures wherever possible.

It is important to note that establishment of old growth management areas will not impact the status of existing mineral, aggregate and gas permits or tenures; exploration and development activities are permitted. The preference is to proceed with exploration and development in a way that is sensitive to the old growth forest attributes of the OGMA; however if exploration and development proceeds to the point of significantly impacting old growth values, then the OGMA will be relocated.

2.6 Recreation: The extensive forest road network has increased recreational opportunities for the public. Recreational hunting in the Anderson LU is an important annual activity enjoyed by many outdoor enthusiasts; most hunters would target deer or black bear. Winter recreational activity is normally restricted by seasonal road deactivation and snow accumulation, although snowmobiling could occur on road systems or alpine areas. Angling opportunities are also limited since stream resident fish are quite small and very few lakes occur. ATV, motorcycle and four wheel drive use of roads for recreation occurs to varying degrees. Trail hiking, berry and mushroom picking and wildlife viewing/sight seeing would also occur. There are no Forest Service Recreation Sites in the Anderson LU, and no plans to develop any for the immediate future.

There is one small provincial park (Alexandra Bridge Park) within the Anderson LU, which contains some mature forest that contributes to old forest requirements.

3.0 Anderson Landscape Unit Objectives

Legal objectives established under the Landscape Unit plan are Higher Level Plan objectives. In part of the Anderson LU the Spotted Owl Management Plan has been approved and is also being considered for Higher Level Plan status with legal objectives. Objectives from both processes are intended to be compatible to the greatest extent possible.

The Anderson LU was ranked as Intermediate BEO through the biodiversity value ranking process completed earlier (see the *Vancouver Forest Region Landscape Unit Planning Strategy*, 1999). This Intermediate designation along with the BEC variant determines the percentage of the Crown forest land base that will be designated as OGMA. Table 2 outlines the total amount of OGMA required in each variant and from which Crown forest category (i.e. Non Contributing-NC; Timber Harvesting Land Base)[11]. The old growth target figures in Table 2 are derived from Appendix 2 in the *Landscape Unit Planning Guide*.

To ensure that landscape level biodiversity values were represented across the landscape, OGMAs were established to the target in each BEC variant. The attached Anderson LU map visually shows their distribution.

Table 2. Old growth management area (OGMA) requirements, Anderson Landscape Unit.

BEC Variant & Natural Disturbance Type	Old Growth Target		Estab-lished OGMAs	OGMAs in Non-Contributing (NC)		OGMAs in Partial Contributing (PC)*		OGMAs in Contributing (C)		Old forest contribution from Parks or Protected Areas	
	%	Ha	Ha	%	Ha	%	Ha	%	Ha	%	Ha
CWHds1, 2	>9	326	330.1	51.7	170.6	48.2	159.1	0.1	0.4	0	0
CWHms1, 2	>9	1777	1782.3	50.4	898.6	31.6	562.7	18.0	321.0	0	0
ESSFmw, 2	>9	595	603.5	85.0	512.7	5.1	30.8	9.9	60.1	0	0
IDFww, 4	>13	667	671.3	76.2	511.5	18.6	124.5	4.6	31.1	0.6	4.3
MHmm2, 1	>19	820	824.3	91.1	751.2	3.0	25.0	5.8	48.1	0	0
Total		4185	4211.6	67.5	2844.6	21.4	902.0	10.9	460.6	0.1	4.3

Note: Differences in totals are due to rounding.
CWHds1: Coastal Western Hemlock, dry submaritime, southern variant. NDT 2
CWHms1: Coastal Western Hemlock, moist submaritime, southern variant. NDT 2
ESSFmw: Engelmann Spruce-Subalpine Fir, moist warm subzone. NDT 2
IDFww: Interior Douglas-fir, wet warm subzone. NDT 4
MHmm2: Mountain Hemlock, moist maritime, leeward variant. NDT 1
A portion of PC and all of C form the Timber Harvesting Land Base (THLB)

* 594.7 ha of the 902.0 ha total in PC is considered part of the THLB. The remaining 307.3 ha are not part of the THLB.

4.0 Anderson OGMA Planning Results

[11] Non Contributing (NC) forest land does not contribute to the Allowable Annual Cut. The Timber Harvesting Land Base (THLB) is made up of Contributing (C) forests and a portion of the Partially Contributing (PC) forests. Partially Contributing forests are "constrained" due to one of several factors such as unstable soils or wildlife habitat, but are still partially available for harvest. Contributing forest is unconstrained and available for timber harvest.

4.1 Timber Harvesting Land Base Impact: After considering existing constraints to the land base and their contribution to OGMAs, a total of 1055 ha from the THLB was identified as OGMA to achieve old growth retention targets. Of this total, 461 ha are from the Contributing land base. Some of the THLB areas captured in OGMA were considered inoperable by licensees or were remnants after logging (see Table 3 for additional details). Other contributing areas represent riparian reserve zones that are in fact unavailable for harvest. In all situations licensees were made aware of OGMA locations in the THLB. Licensee concerns were addressed wherever possible.

4.2 OGMA Age Classes: In the Anderson Landscape Unit there was insufficient old forest (age 250+ years) in all BEC variants to meet OGMA targets. Therefore, it was necessary to designate mature stands as recruitment OGMAs. Approximately 40% of OGMAs were established within forests greater than 250 years old with the remaining 60% established in mature stands which are almost all between 141 to 250 years old.

4.3 OGMA Summary: OGMA attributes together with a rationale for selection of OGMAs is described in Table 3 on the following pages.

TABLE 3:

Anderson Landscape Unit: OGMA Summary and Rationale

OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
1	CWH ms 1	C	8.6	8.6			
1	ESSFmw	C	0.1	0.1			
4	ESSFmw	C	16.7	16.7	larger OGMA	future cutblock to SE	
4	ESSFmw	N	40.0	0.0	larger OGMA	future cutblock to SE	
5	CWH ms 1	P	3.1	3.1			spotted owl LTOH
5	ESSFmw	P	26.8	26.8			spotted owl LTOH
8	CWH ms 1	C	0.5	0.5	large patch, CMTs, riparian	licensee recommended	spotted owl LTOH
8	CWH ms 1	P	87.7	87.7	large patch, CMTs, riparian	licensee recommended	spotted owl LTOH
9	CWH ms 1	N	0.8	0.0	forest interior, large patch		spotted owl LTOH
9	ESSFmw	N	108.0	0.0	forest interior, large patch		spotted owl LTOH
9	ESSFmw	P	3.7	3.7	forest interior, large patch		spotted owl LTOH
10	CWH ms 1	P	0.3	0.3	adjacent to larger OGMA		spotted owl LTOH
10	ESSFmw	N	3.1	0.0	adjacent to larger OGMA		spotted owl LTOH
10	ESSFmw	P	0.2	0.2	adjacent to larger OGMA		spotted owl LTOH
11	CWH ds 1	N	1.2	0.0	riparian		spotted owl LTOH
11	CWH ms 1	N	8.6	0.0	riparian		spotted owl LTOH
11	CWH ms 1	P	1.1	0.8	riparian		spotted owl LTOH
12	CWH ms 1	C	15.3	15.3			spotted owl FMA
16	ESSFmw	C	7.4	7.4	upland old/mature forest	lic. recommended, cutblock at N bndy	
16	ESSFmw	N	42.6	0.0	upland old/mature forest	lic. recommended, cutblock at N bndy	
18	CWH ms 1	C	2.8	2.8	remnant after harvest & fire		
18	CWH ms 1	N	3.9	0.0	remnant after harvest & fire		
19	CWH ms 1	C	13.0	13.0	contrib. old forest required to meet target		
19	CWH ms 1	N	16.6	0.0	old forest		
19	ESSFmw	N	5.5	0.0	old forest		
20	ESSFmw	C	6.0	6.0	remnant patch after wildfire		
20	ESSFmw	N	13.3	0.0	remnant patch after wildfire		
21	CWH ms 1	C	13.4	13.4	contrib. old forest required to meet target		spotted owl FMA
21	CWH ms 1	N	0.1	0.0			spotted owl FMA
21	ESSFmw	C	6.2	6.2	contrib. old forest required to meet target		spotted owl FMA
22	CWH ms 1	C	0.7	0.7			spotted owl LTOH
22	CWH ms 1	N	9.7	0.0			spotted owl LTOH
22	CWH ms 1	P	16.1	16.1			spotted owl LTOH
23	CWH ms 1	N	4.2	0.0	remnant after wildfire		spotted owl LTOH
23	CWH ms 1	P	0.2	0.2	remnant after wildfire		spotted owl LTOH

TABLE 3:

Anderson Landscape Unit: OGMA Summary and Rationale

OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
24	IDF ww	C	0.4	0.4	remnant patch after harv & wildfire		DWR
24	IDF ww	N	6.9	0.0	remnant patch after harv & wildfire		DWR
25	IDF ww	N	3.8	0.0	remnant after wildfire		DWR
25	IDF ww	P	12.6	1.3	remnant after wildfire		DWR
26	IDF ww	N	4.0	0.0	remnant after wildfire		DWR
27	IDF ww	C	28.2	28.2	contrib. old forest required to meet target		
27	IDF ww	N	3.8	0.0			
27	IDF ww	P	0.1	0.0			
28	CWH ms 1	N	39.4	0.0	interior forest, riparian corridor, riparian/upland link		spotted owl LTOH
28	IDF ww	C	2.3	2.3	interior forest, riparian corridor, riparian/upland link		spotted owl LTOH
28	IDF ww	N	178.2	0.0	interior forest, riparian corridor, riparian/upland link		spotted owl LTOH
28	IDF ww	P	101.5	16.5	interior forest, riparian corridor, riparian/upland link		spotted owl LTOH
29	CWH ds 1	N	0.4	0.0			spotted owl LTOH, DWR
29	CWH ds 1	P	26.4	26.4			spotted owl LTOH, DWR
29	CWH ms 1	N	0.1	0.0			spotted owl LTOH, DWR
29	CWH ms 1	P	2.0	2.0			spotted owl LTOH, DWR
30	CWH ms 1	C	46.2	46.2	contrib. old requ'd to meet target		
30	CWH ms 1	N	14.4	0.0	riparian/upland link, large OGMA		
30	ESSFmw	C	6.0	6.0	contrib. old requ'd to meet target		
30	ESSFmw	N	94.5	0.0	high elev forest part of large OGMA		
30	ESSFmw	N	0.4	0.0	shown as AT p on map		
31	ESSFmw	C	2.2	2.2	high elev old forest.		
31	ESSFmw	N	27.1	0.0	high elev old forest.		
35	CWH ms 1	C	4.5	4.5	large patch, forest interior, riparian to upland link	licensee recommended	spotted owl LTOH
35	CWH ms 1	N	26.9	0.0	large patch, forest interior, riparian to upland link		spotted owl LTOH
35	CWH ms 1	P	128.8	128.8	large patch, forest interior, riparian to upland link	licensee recommended	spotted owl LTOH
35	ESSFmw	N	34.0	0.0	large patch, forest interior, riparian to upland link		spotted owl LTOH
36	CWH ms 1	P	7.3	7.3	adjacent to larger OGMA, riparian		spotted owl LTOH
37	CWH ds 1	N	6.5	0.0			spotted owl LTOH
37	CWH ms 1	N	0.8	0.0			spotted owl LTOH
38	IDF ww	N	17.6	0.0	riparian, wildfire east bndry		DWR, partial spotted owl LTOH
39	CWH ms 1	N	6.5	0.0		FDP block adjacent to S side	spotted owl LTOH, partial DWR
39	IDF ww	N	41.4	0.0		FDP block adjacent to S side	spotted owl LTOH, partial DWR
39	IDF ww	P	1.0	0.4		FDP block adjacent to S side	spotted owl LTOH, partial DWR
40	IDF ww	N	10.2	0.0			spotted owl LTOH, DWR

TABLE 3:

Anderson Landscape Unit: OGMA Summary and Rationale

OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
41	IDF ww	C	0.2	0.2	steep, rocky outcrops		spotted owl LTOH, DWR
41	IDF ww	N	29.2	0.0	steep, rocky outcrops		spotted owl LTOH, DWR
42	CWH ms 1	N	41.6	0.0	adjacent to private land, lrg patch, interior forest		spotted owl LTOH, DWR
42	CWH ms 1	P	0.7	0.7	adjacent to private land, lrg patch, interior forest		spotted owl LTOH, DWR
42	IDF ww	N	75.5	0.0	adjacent to private land, lrg patch, interior forest		spotted owl LTOH, DWR
42	IDF ww	P	9.3	9.3	adjacent to private land, lrg patch, interior forest		spotted owl LTOH, DWR
43	CWH ms 1	N	5.2	0.0			spotted owl FMA
44	CWH ms 1	N	4.0	0.0	remnant after harvest & fire, riparian gully		spotted owl FMA
45	CWH ms 1	C	3.8	3.8	remnant after harvest, riparian		spotted owl FMA
46	CWH ms 1	C	3.5	3.5	remnant after harvest		spotted owl FMA
47	CWH ms 1	C	18.5	18.5	remnant after harvest & fire		
47	ESSFmw	C	2.9	2.9	remnant after harvest & fire		
47	ESSFmw	N	0.6	0.0	remnant after harvest & fire		
48	CWH ds 1	N	4.2	0.0	remnant after fire		DWR
48	CWH ms 1	N	13.8	0.0	remnant after fire		
49	CWH ds 1	N	1.1	0.0	remnant after fire		spotted owl FMA, DWR
49	CWH ms 1	N	19.1	0.0	remnant after fire		spotted owl FMA, DWR
50	CWH ds 1	C	0.4	0.4	partial riparian		spotted owl LTOH
50	CWH ds 1	P	40.0	32.8	partial riparian		spotted owl LTOH
51	CWH ms 1	C	29.4	29.4	contrib. old requ'd to meet target		spot owl LTOH, FMA, Griz WHA
51	CWH ms 1	P	11.2	11.2			spot owl LTOH, FMA, Griz WHA
52	CWH ms 1	N	7.4	0.0	steep, rocky outcrops		spotted owl LTOH, DWR
52	IDF ww	N	65.2	0.0	steep, rocky outcrops		spotted owl LTOH, DWR
53	CWH ms 1	N	66.9	0.0	large patch, riparian		spotted owl LTOH, DWR
53	IDF ww	N	79.8	0.0	large patch, riparian, 4.3 ha in Alexandra Park		spotted owl LTOH, DWR
54	CWH ds 1	N	153.3	0.0	interior forest, riparian/upland link, lrg patch		spotted owl LTOH, DWR
54	CWH ds 1	P	79.6	20.9	interior forest, riparian/upland link, lrg patch		spotted owl LTOH, DWR
54	CWH ms 1	N	408.3	0.0	interior forest, riparian/upland link, lrg patch		spotted owl LTOH, DWR
54	CWH ms 1	P	112.7	85.0	interior forest, riparian/upland link, lrg patch		spotted owl LTOH, DWR
54	MH mm 2	N	179.3	0.0	interior forest, riparian/upland link, lrg patch		spotted owl LTOH
54	MH mm 2	P	3.0	2.8	interior forest, riparian/upland link, lrg patch		spotted owl LTOH
55	CWH ms 1	C	32.1	32.1	contrib. old requ'd to meet target		
55	CWH ms 1	N	31.3	0.0	upland corridor, adj to harv area, near #30		partly spotted owl LTOH
55	ESSFmw	C	3.7	3.7	contrib. old requ'd to meet target		
55	CWH ms 1	P	0.3	0.3	remnant that combines with rest of OGMA		
55	ESSFmw	C	3.7	3.7	part of larger patch		

TABLE 3:

Anderson Landscape Unit: OGMA Summary and Rationale

OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
55	ESSFmw	N	15.6	0.0	upland corridor, adj to harv area		
56	CWH ms 1	N	2.2	0.0	adjacent to larger OGMA #30		
57	CWH ds 1	N	3.9	0.0	riparian, old forest, adjacent to v. large OGMA		spotted owl LTOH
57	CWH ds 1	P	13.1	1.3	riparian, old forest, adjacent to v. large OGMA		spotted owl LTOH
57	CWH ms 1	N	14.7	0.0	old forest, adjacent to very large OGMA		spotted owl LTOH
57	CWH ms 1	P	5.7	0.6	old forest, adjacent to very large OGMA		spotted owl LTOH
59	CWH ms 1	C	1.5	1.5	riparian, links with #54 - large OGMA, unstable soils	inop, licensee recommended	spotted owl LTOH
59	CWH ms 1	P	62.1	38.7	riparian, links with #54 - large OGMA, unstable soils	inop, licensee recommended	spotted owl LTOH
60	CWH ms 1	N	3.4	0.0	upland forest		spotted owl LTOH, DWR
60	MH mm 2	N	65.8	0.0	upland forest, lower bndry cut off at BEC line		spotted owl LTOH, partial DWR
60	MH mm 2	P	0.2	0.0	upland forest, lower bndry cut off at BEC line		spotted owl LTOH, partial DWR
61	MH mm 2	C	2.4	2.4	upland forest	lower bndry for future harv opport.	
61	MH mm 2	N	47.5	0.0	upland forest	lower bndry for future harv opport.	
62	MH mm 2	N	33.7	0.0	upland forest	lower bndry for future harv opport.	
63	CWH ms 1	C	3.0	3.0	remnant after harvest & fire	FDP block adjacent to SE side	
63	CWH ms 1	N	8.4	0.0	remnant after harvest & fire	FDP block adjacent to SE side	
63	ESSFmw	N	3.3	0.0	remnant after harvest & fire	FDP block adjacent to SE side	
64	CWH ms 1	C	2.1	2.1	remnant after harvest & fire		
64	CWH ms 1	N	3.3	0.0	remnant after harvest & fire		
64	ESSFmw	C	0.1	0.1	remnant after harvest & fire		
64	ESSFmw	N	5.0	0.0	remnant after harvest & fire		
65	MH mm 2	N	4.7	0.0	remnant after harvest, adj to #98		
67	MH mm 2	N	4.4	0.0	remnant after harvest, adj to #66		
69	MH mm 2	C	8.2	8.2	riparian, WTP	FDP block adjacent	
69	MH mm 2	N	6.6	0.0	riparian, WTP	FDP block adjacent	
71	MH mm 2	N	30.9	0.0	high elev forest, remnant after harvest		
72	MH mm 2	N	14.9	0.0	high elev forest, remnant after harvest		
73	MH mm 2	C	3.3	3.3	high elev forest, remnant after harvest		
73	MH mm 2	N	7.5	0.0	high elev forest, remnant after harvest		
74	MH mm 2	N	7.7	0.0	high elev forest, remnant after harvest		
75	MH mm 2	N	6.4	0.0			
77	CWH ms 1	N	1.0	0.0	steep, vets, snags		
77	MH mm 2	N	35.7	0.0	steep, vets, snags		
79	CWH ms 1	N	34.3	0.0	multi canopy, interior forest, snags		spotted owl LTOH
79	CWH ms 1	P	9.3	0.9	multi canopy, interior forest, snags		spotted owl LTOH
79	MH mm 2	N	76.3	0.0	multi canopy, interior forest, snags		spotted owl LTOH

TABLE 3:

Anderson Landscape Unit: OGMA Summary and Rationale

OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
79	MH mm 2	P	13.9	1.4	multi canopy, interior forest, snags		spotted owl LTOH
80	CWH ms 1	N	66.6	0.0	large patch, interior forest	future blocks to N & S, 33% removal	spotted owl LTOH
80	CWH ms 1	P	38.8	21.6	large patch, interior forest	future blocks to N & S, 33% removal	spotted owl LTOH
80	MH mm 2	N	25.3	0.0	large patch, interior forest	future blocks to N & S, 33% removal	spotted owl LTOH
81	CWH ms 1	P	4.7	4.2	riparian	FDP block adjacent to W side, 33% removal	spotted owl LTOH
82	CWH ms 1	C	23.6	23.6	riparian, valley bottom old forest	licensee recommended	spotted owl FMA
82	CWH ms 1	P	8.8	0.9	riparian, valley bottom old forest	licensee recommended	spotted owl FMA
84	CWH ms 1	N	4.7	0.0	steep, taller trees, snags		spotted owl FMA
84	MH mm 2	N	13.8	0.0	steep, taller trees, snags		spotted owl FMA
87	CWH ms 1	C	73.7	73.7	riparian to upland link (partial), RMA after harv	FDP block adj to N side, licensee agreement	important valley bottom riparian
87	CWH ms 1	N	0.3	0.0	riparian to upland link (partial), RMA after harv	licensee recommended	important valley bottom riparian
87	CWH ms 1	P	22.9	2.3	riparian to upland link (partial), RMA after harv	licensee recommended	important valley bottom riparian
87	MH mm 2	C	10.0	10.0	riparian to upland link (partial), RMA after harv	licensee recommended	
87	MH mm 2	N	27.1	0.0	riparian to upland link (partial), RMA after harv	licensee recommended	
87	MH mm 2	P	1.6	0.2	riparian to upland link (partial), RMA after harv	licensee recommended	
89	CWH ms 1	C	0.4	0.4	WTP, part of larger OGMA, riparian	licensee recommended	
89	MH mm 2	C	10.3	10.3	WTP, part of larger OGMA, riparian	licensee recommended	
89	MH mm 2	N	60.7	0.0	riparian, upland forest	FDP block adjacent to SW side	
90	MH mm 2	N	8.2	0.0	remnant after harvest, upland forest		
98	MH mm 2	N	0.7	0.0	adjacent to OGMA #65		
99	CWH ms 1	C	1.7	1.7	large patch	licensee agreement, FDP block to SE	spotted owl LTOH
99	CWH ms 1	N	3.8	0.0	large patch		
99	CWH ms 1	P	29.4	27.5	large patch	licensee agreement, FDP block to SE	spotted owl LTOH
99	MH mm 2	C	2.4	2.4	large patch	licensee agreement	spotted owl LTOH
99	MH mm 2	N	57.7	0.0	large patch		spotted owl LTOH
99	MH mm 2	P	6.3	0.7	large patch	licensee agreement	spotted owl LTOH
100	CWH ms 1	C	0.6	0.6		licensee agreement	spotted owl LTOH
100	CWH ms 1	N	16.3	0.0		licensee agreement	spotted owl LTOH
100	CWH ms 1	P	9.6	9.6		licensee agreement	spotted owl LTOH
100	MH mm 2	N	10.3	0.0		licensee agreement	spotted owl LTOH
101	MH mm 2	C	11.4	11.4		licensee agreement	
101	MH mm 2	N	26.1	0.0		licensee recommended	
103	ESSF mw	C	8.7	8.7	riparian, constrained	licensee recommended	
103	ESSF mw	N	8.0	0.0	riparian	licensee recommended	
104	CWH ms 1	C	22.3	22.3	riparian, constrained	licensee recommended	

TABLE 3:

Anderson Landscape Unit: OGMA Summary and Rationale

OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
104	CWH ms 1	N	9.7	0.0	riparian	licensee recommended	
105	ESSF mw	N	84.3	0.0	large patch, improves spatial distribution	licensee recommended	
106	ESSF mw	N	27.6	0.0	comb with #9 for large complex		spotted owl LTOH

Appendix 4 – Mehatl Landscape Unit

1.0 Mehatl Landscape Unit Description

The Mehatl LU covers a total area of 78789 ha which includes the western half of the Nahatlatch watershed. The Nahatlatch watershed in its entirety is a large sized stream system flowing into the Fraser River just north of Boston Bar. Of the total area, 25975 ha (33%) is within the Crown forest land base, and 5378 ha of Crown forest land is included in the THLB. The remaining 52814 ha (67%) are non-forested (e.g. rock, ice, alpine tundra, water) and have been excluded from any OGMA contributions and calculations.

A small portion of the north-eastern part of the Mehatl LU is situated within the Southern Interior Ecoprovince in the Leeward Pacific Ranges Ecosection, while the majority is located within the Coast and Mountains Ecoprovince in the Eastern Pacific Ranges Ecosection. The LU is comprised of 6 Biogeoclimatic Ecosystem Classification (BEC) subzones/variants ranging from valley bottom Coastal Western Hemlock along the Nahatlatch River to high elevation Alpine Tundra. The 6 variants represent 4 Natural Disturbance Types (NDT)[12]. Approximately 38% of the Mehatl LU is in NDT 2, with about 42% in NDT 5, 19% in NDT 1 and less than 1% in NDT 4.

Portions of the Mehatl LU have been subject to past and recent disturbances, while some remains in its natural state. The lower elevation productive and gentle terrain sites have been disturbed by past forest harvesting or other events. Wild fires have occurred but have not played a substantial role in the composition of forests at higher elevations in the Mehatl LU.

Major habitat types present in the Mehatl LU include: upland forest, riparian forest, wetlands, small lakes, steep partly forested rocky slopes, sub-alpine forest, alpine and glaciers; all of which contribute to the area's complexity. The wildlife and biodiversity values of the Mehatl LU are significant in a District context.

2.0 Significant Resource Values

The Mehatl LUs biodiversity values, together with the Nlaka'pamux First Nation, and high recreation values has a substantial effect on the relative values of the LUs resources and corresponding management strategies. The Landscape Unit supports a wide range of natural resource values and features, as well as a diversity of social and cultural values and influences. These factors, in combination with the forest road network add complexity to resource management in this area.

2.1 Fish, Wildlife and Biodiversity: Wildlife resources of primary management concern in the Mehatl LU include: grizzly bear, mountain goats, mule/black-tailed deer, fish and some species at risk that are considered

[12] NDT 1 includes ecosystems with rare stand-initiating events; NDT 2 includes those ecosystems with infrequent stand-initiating events. NDT 4 includes those ecosystems with frequent stand-maintaining fires. NDT 5 are ecosystems like Alpine Tundra and Subalpine Parkland with no commercial timber value. For a more complete description of NDTs see the *Biodiversity Guidebook* (1995).

"Identified Wildlife"[13]. Many other species occur including various forest birds, raptors, small mammals, amphibians and furbearers but their habitat requirements are generally managed within habitat provisions for primary species. For example, Crown forest habitat for mountain goats in the Mehatl LU covers approximately 495 ha as identified by Ministry of Environment, Lands and Parks (MELP, now called MWLAP). In addition, deer winter range also occurs within the Crown forest land base and covers 927 ha (Classic, Crown forest only) according to MWLAP inventory. All or a portion of these areas will be considered for legal establishment as Ungulate Winter Range (UWR) under the FPC according to a Deer Winter Range Management Plan (Freeman, 2002.) and Mountain Goat Winter Range Plan (Jex, 2002). Some of the UWR has been captured in OGMA. These forested habitats would also benefit other species.

Further, riparian reserve zones where they are established (as per the FPC) adjacent to fish streams will help maintain fish and wildlife habitat. Where riparian areas adjacent to fish streams have been logged, habitat will be provided in the future as it re-grows.

Grizzly bears in the Mehatl LU are within the threatened Stein-Nahatlatch grizzly bear population unit for which a Recovery Plan has yet to be drafted. In general, the Recovery Plan once completed will include objectives and strategies to protect and/or enhance grizzly bear habitat values in the Mehatl LU consistent with the provincial Grizzly Bear Conservation Strategy. Grizzly bears are also considered an Identified Wildlife species. Provisions exist to protect some critical foraging or security habitat within Wildlife Habitat Areas (WHA); designation of WHAs will occur as necessary or as part of the Recovery Plan. Other species of Identified Wildlife (e.g. northern goshawk, tailed frog) that may be discovered in future may receive habitat protection within WHAs as well. In turn, these WHAs will help provide habitat for species not actively managed for.

Fish and wildlife inventories have been completed or are scheduled in the landscape unit for several reasons. During the winters of 1999 and 2000, MELP district staff conducted mountain goat winter range inventory in the LU. During the winter of 2001-2002 MWLAP staff participated in developing a comprehensive Deer Winter Range Management Plan (Freeman, 2002). A comprehensive fisheries inventory in the Nahatlatch River watershed was completed in 1994 (Griffiths, 1995). A harlequin duck distribution and abundance inventory was completed in the Nahatlatch River in 1996-97 (Freeman & Goudie, 1998). Spotted owl inventory has been conducted periodically since the early 1990s. All inventory efforts have helped identify critical wildlife habitats that have been considered during OGMA delineation.

2.2 Timber Resources: Although the timber harvesting land base represents only about 7% of the Mehatl LU, it is still an important resource value. Continued access to commercially valuable timber, including future second growth, is a significant concern.

Commercially valuable tree species in the Mehatl LU include Douglas-fir at the lower to mid elevations, while hemlock and sub-alpine fir are found from mid to high elevations. A small component of cedar, pine and spruce are scattered throughout the landscape unit. Based on forest cover information, Table 1 shows the age composition of forests in the Mehatl Landscape Unit.

[13] Volume 1 of the *Identified Wildlife Management Strategy* includes a list of 36 wildlife species and 4 plant communities that are considered to be at risk. These species or plant communities require special management of critical habitat to maintain or restore populations or distributions. Critical habitat is protected within Wildlife Habitat Areas. See the *Identified Wildlife Management Strategy Volume 1 February 1999* for more information.

Table 1. Age distribution of forests within the Mehatl Landscape Unit.

Age	% of Crown Forested Landbase
0-60	13%
61-140	12%
141-250	21%
251+	54%

Due to the interior ecological influence in this area, site productivity is lower than most other areas in the Chilliwack Forest District. The majority of forested stands in the Mehatl LU are between site index classes of 10 to 15. (Site index is the estimated height of a tree at age 50 years).

Two forest licensees operate in the Mehatl Landscape Unit. Cattermole Timber is the primary licensee holding a large chart area. Their timber is trucked to Sardis where it is sold to various companies. International Forest Products Ltd. has a small chart in Teapot Creek in the south-east corner of the LU. Timber is trucked to their Hope Division sort where it is processed further or sold.

Forest management activities occur throughout all phases of forest development. Operational work includes pre-harvest planning, harvesting and stand regeneration. Post harvest activities include planting, brushing, juvenile spacing, pruning and thinning.

2.3 Private Land: There is no private land within the Mehatl LU.

2.4 First Nations: The Mehatl LU is located within the traditional territory of the Nlaka'pamux First Nation (NNTC). Bands that are part of the NNTC in the Fraser Canyon are Boston Bar, Boothroyd and Spuzzum.

There is evidence of traditional use extending westerly from the Fraser River along trail, lake and river systems in Nahatlatch valley. Culturally modified trees have also been previously identified in some forested areas. Pine mushroom gathering by First Nations in the Nahatlatch valley is an important annual activity.

Between 1997 and 1999, an Archaeological Overview Assessment model was developed by MOF to indicate where archaeological sites are most likely located. This was done to minimize potential impacts by forestry operations on culturally important areas. The model was useful in predicting the location of habitation sites and high elevation campsites in the sub-alpine. Travel routes were also identified.

The maps produced from the model were reviewed to determine if archaeological potential sites and travel routes were captured in OGMAs. In the Mehatl LU, potential archaeological sites located in valley bottom areas (riparian) and mid slope were included in OGMAs when there were old or mature forests in the same locations. Small sections of trails were captured in OGMAs when they overlapped with areas of old forest located from lower to upper slopes.

2.5 Mining and Mineral Exploration: Subsurface resources (minerals, coal, oil, gas and geothermal) and aggregate resources are significant to the province. OGMAs have been located to avoid existing

tenures wherever possible. It is important to note that establishment of old growth management areas will not impact the status of existing mineral, aggregate and gas permits or tenures; exploration and development activities are permitted. The preference is to proceed with exploration and development in a way that is sensitive to the old growth forest attributes of the OGMA; however if exploration and development proceeds to the point of significantly impacting old growth values, then the OGMA will be relocated.

2.6 Recreation: The forest road network provides recreational opportunities for the public. Cattermole Timber maintains a gate at 46.5 km on the Nahatlatch Forest Service Road that is periodically locked to protect their logging camp and equipment. Recreational fishing is provided in Nahatlatch River and Nahatlatch Lakes. Recreational hunting in the Mehatl LU is an important annual activity enjoyed by many outdoor enthusiasts, most hunters would target deer and black bears. Winter recreational activity is normally restricted by seasonal road deactivation, locked gates and snow accumulation, although snowmobiling could occur on road systems or alpine areas. ATV, motorcycle and four wheel drive use of roads for recreation occurs to varying degrees. Trail hiking on established trails, berry picking and wildlife viewing/sight seeing also occurs. During the fall of each year a substantial amount of people gather to pick pine mushrooms commercially in the Nahatlatch valley.

There are no Forest Service Recreation Site in the Mehatl LU, and no plans to develop any for the immediate future. Unauthorized camping occurs along the Nahatlatch River at access points. There are two provincial parks within the landscape unit, Mehatl Creek Provincial Park is large and occupies almost all of Mehatl Creek watershed. The Nahatlatch Provincial Park is linear, it follows the Nahatlatch River and is linked to the southwest corner of Mehatl Creek Park. Since Mehatl Creek Park is relatively new it does not have park facilities or infrastructure, although there is an established hiking trail to Mehatl Falls. The Mehatl Creek Park is considered a wilderness area since it has not been roaded or developed. Some old forest in the parks will contribute to old forest requirements.

Three or four commercial river rafting companies offers raft trips on the Nahatlatch River, the upstream launching area for some trips would be within the Mehatl LU. REO Rafting also offers guided day hiking trips into Mehatl Creek Park.

3.0 Mehatl Landscape Unit Objectives

The Mehatl LU was ranked as Intermediate biodiversity emphasis option through the biodiversity value ranking process completed earlier (see the *Vancouver Forest Region Landscape Unit Planning Strategy,* 1999). This Intermediate designation along with the BEC variant determines the percentage of the landscape unit's Crown forest land base that will be designated as OGMA. Table 2 outlines the total amount of OGMA required in each variant and from which Crown forest category (i.e. Non Contributing-NC; Timber Harvesting Land Base)[14]. The old growth target figures in Table 2 are derived from Appendix 2 in the *Landscape Unit Planning Guide*.

[14] NC forest land does not contribute to the Allowable Annual Cut. The Timber Harvesting Land Base (THLB) is made up of Contributing forests (C) and a portion of the Partially Contributing (PC) forests. Partially Contributing forests are "constrained" due to one or more of several factors such as poor soils or wildlife habitat, but are still partially available for harvest. Contributing forest is unconstrained and available for timber harvest.

To ensure that landscape level biodiversity values were represented across the landscape, OGMAs were established to the target in each BEC variant. The attached Mehatl LU map shows their distribution.

Table 2. Old growth management area (OGMA) requirements, Mehatl Landscape Unit.

BEC Variant & Natural Disturbance Type	Old Growth Target		Estab-lished OGMAs	OGMAs in Non-Contributing (NC)		OGMAs in Partial Contributing (PC)*		OGMAs in Contributing (C)		Old forest contribution from Parks or Protected Areas	
	%	Ha	Ha	%	Ha	%	Ha	%	Ha	%	Ha
CWHds1, 2	>9	347	350.7	49.9	175.0	0	0	1.3	4.0	49.0	171.7
CWHms1, 2	>9	1133	1136.5	58.9	669.8	2.8	32.4	1.6	17.5	36.7	416.9
ESSFmw, 2	>9	374	375.1	66.6	249.9	0	0	1.0	3.6	32.4	121.6
IDFww, 4	>13	65	67.9	100	67.9	0	0	0	0	0	0
MH mm2, 1	>19	925	931.4	66.0	614.6	0.7	6.9	1.0	9.4	32.2	300.5
TOTAL		2844	2861.6	62.1	1777.2	1.4	39.3	1.2	34.5	35.3	1010.7

Note: Differences in totals are due to rounding.
CWHds1: Coastal Western Hemlock, dry submaritime, southern variant. NDT 2
CWHms1: Coastal Western Hemlock, moist submaritime, southern variant. NDT 2
ESSFmw: Engelmann Spruce-Subalpine Fir, moist warm subzone. NDT 2
MH mm2: Mountain Hemlock, moist maritime, leeward variant. NDT 1
IDFww: Interior Douglas-fir, wet warm subzone. NDT 4
A portion of PC and all of C form the Timber Harvesting Land Base (THLB).
* 3.9 ha of the total 39.3 ha in PC are part of the THLB. The remaining 35.4 ha are not part of the THLB.

4.0 Mehatl OGMA Planning Results

4.1 Timber Harvesting Land Base Impact: In the Mehatl LU, almost all OGMA requirements were met within the non-contributing land base. In total, 38.4 ha from the THLB was identified as OGMA to achieve old growth retention targets. Of this, 34.5 ha is from the contributing land base. It is important to note that most of the OGMAs reported as THLB were either suggested or agreed to by licensees (see Table 3 for additional details). Licensee concerns with other candidate OGMAs were addressed wherever possible.

4.2 OGMA Age Classes: In the Mehatl Landscape Unit virtually all OGMA targets (99%) were met in old forest (250+ years) for all BEC variants. The remaining 1% were mature stands adjacent to or within old forest OGMAs that were chosen to increase patch size. Establishing OGMAs within predominantly old forest reduces risk to biodiversity values since old forest attributes already exist.

4.3 OGMA Summary: OGMA attributes together with a rationale for selection of OGMAs is described in Table 3 on the following pages.

TABLE 3:

Mehatl Landscape Unit: OGMA Summary and Rationale

OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
2	CWH ms 1	N	18.0	0.0	Mehatl Park, riparian, wetland, adj. to #3,4,5		suitable grizzly habitat
3	CWH ms 1	N	1.8	0.0	Mehatl Park, riparian, wetland, adj. to #2,4,5		suitable grizzly habitat
4	CWH ms 1	N	71.7	0.0	Mehatl Park, riparian, wetland, adj. to #2,3,5		suitable grizzly habitat
4	MH mm 2	N	0.9	0.0	Mehatl Park, riparian, wetland, adj. to #2,3,5		suitable grizzly habitat
5	CWH ms 1	N	18.4	0.0	Mehatl Park, riparian, wetland, adj. to #2,3,4		suitable grizzly habitat
6	MH mm 2	N	0.5	0.0	shown as ATp on map		suitable grizzly habitat
6	MH mm 2	N	6.9	0.0	#6,7,10-14 form large patch, link to Rogers Cr		suitable grizzly habitat
7	MH mm 2	N	37.4	0.0	#6,7,10-14 form large patch, link to Rogers Cr		suitable grizzly habitat
8	CWH ms 1	C	6.2	6.2	riparian headwaters	isolated patch borders with Mehatl Park	suitable grizzly habitat, avalanche chutes
8	CWH ms 1	N	14.6	0.0	partially in Mehatl Park, riparian		suitable grizzly habitat, avalanche chutes
8	MH mm 2	C	2.4	2.4	riparian headwaters	isolated patch borders with Mehatl Park	suitable grizzly habitat, avalanche chutes
8	MH mm 2	N	0.7	0.0	partially in Mehatl Park, riparian		suitable grizzly habitat, avalanche chutes
9	CWH ms 1	N	68.6	0.0	Mehatl Park, large patch, riparian, wetland		suitable grizzly habitat
9	ESSFmw	N	89.1	0.0	Mehatl Park, large patch, riparian, wetland		suitable grizzly habitat
10	MH mm 2	N	18.9	0.0	#6,7,10-14 form large patch, link to Rogers Cr		suitable grizzly habitat
11	MH mm 2	N	10.4	0.0	#6,7,10-14 form large patch, link to Rogers Cr		suitable grizzly habitat
12	MH mm 2	N	2.6	0.0	#6,7,10-14 form large patch, link to Rogers Cr		suitable grizzly habitat
13	MH mm 2	N	15.0	0.0	#6,7,10-14 form large patch, link to Rogers Cr		suitable grizzly habitat
14	MH mm 2	N	145.7	0.0	#6,7,10-14 form large patch, large patch		suitable grizzly habitat
15	CWH ms 1	N	160.5	0.0	Mehatl Park, interior forest, riparian, wetland		avalanche chutes adj, suitable grizzly hab.
15	MH mm 2	N	135.0	0.0	Mehatl Park, interior forest, riparian, wetland		avalanche chutes adj, suitable grizzly hab.
17	CWH ms 1	N	83.4	0.0	#17, 18, 22, 24, 47 combine to form large complex		riparian to upland link
17	ESSFmw	N	101.2	0.0	#17, 18, 22, 24, 47 combine to form large complex		riparian to upland link
18	CWH ms 1	N	1.7	0.0	#17, 18, 22, 24, 47 combine to form large complex		mtn goat winter range (MGWR)
18	ESSFmw	N	13.3	0.0	#17, 18, 22, 24, 47 combine to form large complex		mtn goat winter range (MGWR)
22	CWH ms 1	N	6.2	0.0	#17, 18, 22, 24, 47 combine to form large complex		
23	CWH ms 1	N	18.9	0.0	Mehatl Park, riparian to upland link, large patch		avalanche chutes adjacent
23	MH mm 2	N	164.6	0.0	Mehatl Park, riparian to upland link, large patch		avalanche chutes adjacent
24	CWH ds 1	N	56.5	0.0	#17, 18, 22, 24, 47 combine to form large complex		MGWR, DWR, riparian to upland link
24	CWH ms 1	N	85.7	0.0	#17, 18, 22, 24, 47 combine to form large complex		MGWR, DWR, riparian to upland link
24	ESSFmw	N	4.4	0.0	#17, 18, 22, 24, 47 combine to form large complex		MGWR, DWR, riparian to upland link
24	IDF ww	N	46.7	0.0	#17, 18, 22, 24, 47 combine to form large complex		MGWR, DWR, riparian to upland link
25	CWH ms 1	N	4.6	0.0	#25, 28, 53, 54 form larger complex	FDP block adjacent on SW side	avalanche chutes adjacent
25	ESSFmw	N	11.2	0.0	#25, 28, 53, 54 form larger complex		avalanche chutes adjacent
26	CWH ms 1	N	11.4	0.0	large patch	FDP block adjacent on NW side	avalanche chutes
26	MH mm 2	N	38.4	0.0	large patch		avalanche chutes
27	IDF ww	N	20.9	0.0			DWR
28	ESSFmw	N	4.3	0.0	#25, 28, 53, 54 form larger complex		avalanche chutes adjacent

TABLE 3:

Mehatl Landscape Unit: OGMA Summary and Rationale

OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
29	CWH ms 1	N	5.8	0.0	forms larger complex with #26		avalanche chutes
29	MH mm 2	N	2.3	0.0	forms larger complex with #26		avalanche chutes
31	CWH ms 1	N	16.3	0.0			avalanche chutes
33	CWH ds 1	C	4.0	4.0	large patch	replacement for licensee interest area	mostly DWR
33	CWH ds 1	N	96.6	0.0	large patch		mostly DWR
33	CWH ms 1	N	35.2	0.0	large patch		mostly DWR
34	CWH ms 1	C	0.7	0.7			
34	CWH ms 1	N	15.7	0.0			
34	MH mm 2	N	3.1	0.0	shown as ATp on map		
34	MH mm 2	N	21.2	0.0			
35	CWH ds 1	N	48.3	0.0	Mehatl Park, riparian to upland link, large patch		deer winter range (DWR)
35	CWH ms 1	N	33.2	0.0	Mehatl Park, riparian to upland link, large patch		deer winter range (DWR)
36	CWH ds 1	N	48.9	0.0	partially in Mehatl Park, large patch		DWR
36	CWH ms 1	N	26.2	0.0	partially in Mehatl Park, large patch		DWR
37	CWH ms 1	N	150.9	0.0	large patch, dispersal linkage		
37	ESSFmw	N	36.5	0.0	large patch, dispersal linkage		
38	CWH ds 1	N	10.6	0.0	Nahatlatch Park, valley bottom riparian		
39	CWH ds 1	N	8.7	0.0	Nahatlatch Park, valley bottom riparian		
40	CWH ds 1	N	18.9	0.0	riparian		good slide track adjacent
41	CWH ms 1	C	8.4	8.4	riparian to upland link, forest interior	licensee agreement, FDP block on W side	
41	CWH ms 1	N	104.8	0.0	riparian to upland link, forest interior	FDP block adjacent on W side	
41	MH mm 2	N	144.9	0.0	riparian to upland link, forest interior	FDP block adjacent on SW side	
44	CWH ms 1	N	8.9	0.0	riparian to upland link, larger patch		
44	MH mm 2	N	44.2	0.0	riparian to upland link, larger patch		
45	CWH ms 1	N	17.3	0.0	#44, 45, 49, 50 form headwaters riparian complex		suitable grizzly habitat
45	MH mm 2	N	16.9	0.0	#44, 45, 49, 50 form headwaters riparian complex		suitable grizzly habitat
46	ESSFmw	N	32.5	0.0	Mehatl Park, headwaters riparian		
47	CWH ms 1	N	0.7	0.0	#17, 18, 22, 24, 47 combine to form large complex		avalanche chutes adjacent
47	ESSFmw	N	12.9	0.0	#17, 18, 22, 24, 47 combine to form large complex		avalanche chutes adjacent
48	CWH ds 1	N	17.0	0.0	Mehatl Park, valley bottom riparian		
49	CWH ms 1	N	6.4	0.0	#44, 45, 49, 50 form headwaters riparian complex		suitable grizzly habitat
49	MH mm 2	N	3.9	0.0	#44, 45, 49, 50 form headwaters riparian complex		suitable grizzly habitat
50	CWH ms 1	C	0.1	0.1	#44, 45, 49, 50 form headwaters riparian complex		suitable grizzly habitat
50	CWH ms 1	N	4.2	0.0	#44, 45, 49, 50 form headwaters riparian complex		suitable grizzly habitat
50	MH mm 2	N	26.5	0.0	#44, 45, 49, 50 form headwaters riparian complex		suitable grizzly habitat
51	CWH ds 1	N	7.6	0.0			MGWR

TABLE 3:

Mehatl Landscape Unit: OGMA Summary and Rationale

OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
51	ESSFmw	N	16.8	0.0			MGWR
51	IDF ww	N	0.2	0.0			
52	CWH ms 1	C	2.1	2.1	#52 & 56 are adjacent	licensee recommended, FDP block on N side	
52	MH mm 2	C	7.0	7.0	#52 & 56 are adjacent	licensee recommended	
52	MH mm 2	N	9.3	0.0	#52 & 56 are adjacent		
52	MH mm 2	P	6.9	0.7	#52 & 56 are adjacent	licensee recommended	
53	ESSFmw	C	1.7	1.7	#25, 28, 53, 54 form larger complex	replacement for licensee interest area	avalanche chutes, suitable grizzly habitat
53	ESSFmw	N	42.1	0.0	#25, 28, 53, 54 form larger complex		avalanche chutes, suitable grizzly habitat
54	ESSFmw	C	1.8	1.8	#25, 28, 53, 54 form larger complex	replacement for licensee interest area	avalanche chutes, suitable grizzly habitat
54	ESSFmw	N	7.1	0.0	#25, 28, 53, 54 form larger complex	FDP block adjacent on S side	avalanche chutes, suitable grizzly habitat
55	CWH ms 1	N	49.5	0.0	large patch		
55	CWH ms 1	P	32.3	3.2	large patch	licensee recommended	
55	MH mm 2	N	33.8	0.0	large patch		
56	CWH ms 1	N	0.1	0.0	#52 & 56 are adjacent		
56	MH mm 2	N	5.2	0.0	#52 & 56 are adjacent		
57	CWH ms 1	N	12.6	0.0	remnant after fire		
58	CWH ds 1	N	33.6	0.0	Mehatl Park, riparian		
60	CWH ms 1	C	0.1	0.1		FDP block adjacent on E side	
60	CWH ms 1	N	33.4	0.0		FDP block adjacent on E side	
60	CWH ms 1	P	0.1	0.0		FDP block adjacent on E side	
60	MH mm 2	N	26.8	0.0		FDP block adjacent on E side	

Appendix 5 – Nahatlatch Landscape Unit

1.0 Nahatlatch Landscape Unit Description

The Nahatlatch LU covers a total area of 76466 ha, which includes the eastern half of the Nahatlatch watershed and all of Scuzzy Creek and Speyum Creek watersheds. The Nahatlatch watershed in its entirety is a large sized stream system flowing into the Fraser River just north of Boston Bar. Scuzzy Creek is considered a medium sized watershed and it enters the Fraser River just south of Boston Bar. Speyum Creek is a small watershed located between Scuzzy and Nahatlatch. Of the total area, 38268 ha (50%) is within the Crown forest land base, and 15537 ha of Crown forest land is included in the THLB. The remaining 38198 ha (50%) are non-forested or non-Crown (e.g. rock, alpine tundra, water, private land) and have been excluded from any OGMA contributions and calculations.

The northern three-quarters of the Nahatlatch LU is situated within the Southern Interior Ecoprovince in the Leeward Pacific Ranges Ecosection, while the southern one-quarter is located within the Coast and Mountains Ecoprovince in the Eastern Pacific Ranges Ecosection. The LU is comprised of 6 Biogeoclimatic Ecosystem Classification (BEC) subzones/variants ranging from low elevation Interior Douglas-fir adjacent to the Fraser River canyon to high elevation Alpine Tundra. The 6 variants represent 4 Natural Disturbance Types (NDT)[15]. Approximately half of the Nahatlatch LU is in NDT 2, with about 20% in NDT 4, almost 24% in NDT 5 and less than 8% in NDT 1.

The Nahatlatch LU has sustained significant levels of disturbance. Much of the lower elevation productive and gentle terrain sites have been disturbed by past forest harvesting, fire or other events. Two recent wild fires, the Scuzzy fire in 1985 and the Nahatlatch fire in 1998, burned substantial amounts of Crown forest. The low level of old seral forest within the Nahatlatch LU reflects this long disturbance history.

Major habitat types present in the Nahatlatch LU include: upland forest, riparian forest, wetlands, small and large lakes, steep partly forested rocky slopes, sub-alpine forest, and alpine; all of which contribute to the area's complexity. The wildlife and biodiversity values of the Nahatlatch LU are significant in a District context.

2.0 Significant Resource Values

The Nahatlatch LUs biodiversity values and proximity to the sawmill in Boston Bar, together with the Nlaka'pamux First Nation, the Trans-Canada highway and associated communities, and high recreation values has a substantial effect on the relative values of the LUs resources and corresponding management strategies. The Landscape Unit supports a wide range of natural resource values and features, as well as a diversity of social and cultural values and influences. These factors, in combination with an extensive forest road network add complexity to resource management in this area.

[15] NDT 1 includes ecosystems with rare stand-initiating events; NDT 2 includes those ecosystems with infrequent stand-initiating events. NDT 4 includes those ecosystems with frequent stand-maintaining fires. NDT 5 are ecosystems like Alpine Tundra and Subalpine Parkland with no commercial timber value. For a more complete description of NDTs see the *Biodiversity Guidebook* (1995).

2.1 Fish, Wildlife and Biodiversity: Wildlife resources of primary management concern in the Nahatlatch LU include: grizzly bear, mountain goats, mule deer, fish and some species at risk that are considered "Identified wildlife"[16]. Many other species occur including various forest birds, raptors, small mammals, amphibians and furbearers but their habitat requirements are generally managed within habitat provisions for primary species. For example, habitat for mule deer in the Nahatlatch LU covers approximately 2285 ha (Classic, Crown forest only) as identified by Ministry of Environment, Lands and Parks (MELP, now called MWLAP). In addition, a further 303 ha of mountain goat winter range occurs within the Crown forest land base. All or a portion of these areas are being considered for legal establishment as Ungulate Winter Range (UWR) under the FPC according to a Deer Winter Range Management Plan (Freeman, 2001) and Mountain Goat Winter Range Plan (Jex, 2002). Some of the UWR has been captured in OGMA. These forested habitats would also benefit other species.

Further, most of the lower gradient streams in the Nahatlatch LU support anadromous or resident salmonid populations. Riparian reserve zones established (as per the FPC) adjacent to these fish streams will help maintain fish and wildlife habitat. Where riparian areas have been logged, habitat will be provided in the future as it re-grows.

Grizzly bears in the Nahatlatch LU are within the threatened Stein-Nahatlatch grizzly bear population unit for which a Recovery Plan has yet to be drafted. In general, the Recovery Plan once completed will include objectives and strategies to protect and/or enhance grizzly bear habitat values in the Nahatlatch LU consistent with the provincial Grizzly Bear Conservation Strategy. Grizzly bears are also considered an Identified Wildlife species. Provisions exist to protect some critical foraging or security habitat within Wildlife Habitat Areas (WHA); designation of WHAs will occur as necessary or as part of the Recovery Plan. Other species of Identified Wildlife (e.g. northern goshawk, tailed frog) that may be discovered in future may receive habitat protection within WHAs as well. In turn, these WHAs will help provide habitat for species not actively managed for.

Fish and wildlife inventories have been completed in the landscape unit for several reasons. During the winters of 1999 and 2000, MELP district staff conducted mountain goat winter range inventory in the LU (Jex, 2002), and in 1999 participated in developing a comprehensive Deer Winter Range Management Plan (Freeman, 2001). A comprehensive fisheries inventory in the Nahatlatch River watershed was completed in 1994 (Griffiths, 1995). A harlequin duck distribution and abundance inventory was completed in the Nahatlatch River in 1996-97 (Freeman & Goudie, 1998). Preliminary grizzly bear DNA sampling was undertaken in 1997 as part of another project. Spotted owl inventory has been conducted periodically since the early 1990s. All inventory efforts have helped identify critical wildlife habitats that have been considered during OGMA delineation.

2.2 Timber Resources: The presence of a substantial timber harvesting land base establishes the importance of timber resource values. Continued access to commercially valuable timber, including future second growth, is a significant concern. Forest roads also provide access into other watersheds

[16] Volume 1 of the *Identified Wildlife Management Strategy* includes a list of 36 wildlife species and 4 plant communities that are considered to be at risk. These species or plant communities require special management of critical habitat to maintain or restore populations or distributions. Critical habitat is protected within Wildlife Habitat Areas. See the *Identified Wildlife Management Strategy Volume 1 February 1999* for more information.

(e.g. Kookipi Creek to Big Silver) for harvesting purposes. First pass harvesting of accessible old growth is nearing completion.

Commercially valuable tree species in the Nahatlatch LU include Douglas-fir at the lower to mid elevations, while sub-alpine fir, hemlock, lodgepole pine, and spruce range from mid to high elevation. A small component of cedar and deciduous species are scattered throughout the landscape unit. Based on forest cover information, Table 1 shows the age composition of forests in the Nahatlatch LU.

Table 1. Age distribution of forests within the Nahatlatch Landscape Unit.

Age	**% of Crown Forested Landbase**
0-60	32%
61-140	17%
141-250	43%
251+	8%

Due to the interior ecological influence in this area, site productivity ranges from low to moderate. The majority of forested stands in the Nahatlatch LU are between site index classes of 10 to 20 (site index is the estimated height of a tree at age 50 years).

Three licensees operate in the Nahatlatch Landscape Unit. Teal Cedar Products Ltd., formerly J.S. Jones Timber Ltd., operates in the Nahatlatch and Scuzzy Creek. The timber is trucked to their sawmill in Boston Bar where it is processed. The Small Business Forest Enterprise Program (SBFEP), operated by the Ministry of Forests, manages the forestry operations in Kookipi Creek. Timber sales issued by SBFEP are sold to registered small business operators. Tamihi Logging Co. Ltd. operates in Six Mile Creek, a tributary to Scuzzy Creek.

Forest management activities occur throughout all phases of forest development. Operational work includes pre-harvest planning, harvesting and stand regeneration. Post harvest activities include planting, brushing, juvenile spacing, pruning and thinning.

2.3 Private Land: Several small parcels of private land exist within the Nahatlatch LU, including private forest land, privately owned recreational lots, Indian Reserves and agricultural land. Private land holdings remain an important consideration when establishing OGMAs. Some of the private land has been altered from its natural state and this change may influence the ecology of adjacent Crown forest lands. Where private and Crown land interfaced, these factors were considered during OGMA delineation.

2.4 First Nations: The Nahatlatch LU is located within the traditional territory of the Nlaka'pamux First Nation (NNTC). Bands that are part of the NNTC in the Fraser Canyon are Boston Bar, Boothroyd and Spuzzum.

There is evidence of traditional use in many areas near the Fraser River canyon and extending inland in the Nahatlatch Valley and Scuzzy Creek. Culturally modified trees have also been previously identified in some

forested areas. Several Indian Reserves are situated near the eastern edge of the LU along the Fraser River. Pine mushroom gathering by First Nations in the Nahatlatch is an important annual activity.

Between 1997 and 1999, an Archaeological Overview Assessment model was developed by MOF to indicate where archaeological sites are most likely located. This was done to minimize potential impacts by forestry operations on culturally important areas. The model was useful in predicting the location of habitation sites and high elevation campsites in the sub-alpine. Travel routes were also identified.

The maps produced from the model were reviewed to determine if archaeological potential sites and travel routes were captured in OGMAs. In the Nahatlatch LU, sections of travel routes were captured in OGMAs when they overlapped with areas of old forest usually along mid slopes or in the valley bottoms. Potential archaeological sites located along valley bottom areas or in side tributaries (often riparian areas) were also included in OGMAs when there were old or mature forests in the same locations.

2.5 Mining and Mineral Exploration: Subsurface resources (minerals, coal, oil, gas and geothermal) and aggregate resources are significant to the province. OGMAs have been located to avoid existing tenures wherever possible.

It is important to note that establishment of old growth management areas will not impact the status of existing mineral, aggregate and gas permits or tenures; exploration and development activities are permitted. The preference is to proceed with exploration and development in a way that is sensitive to the old growth forest attributes of the OGMA; however if exploration and development proceeds to the point of significantly impacting old growth values, then the OGMA will be relocated.

2.6 Recreation: The extensive forest road network has increased recreational opportunities for the public. Recreational fishing is provided in Nahatlatch Lakes, Nahatlatch River, Log Creek and lower Scuzzy Creek. Recreational hunting in the Nahatlatch LU is an important annual activity enjoyed by many outdoor enthusiasts, most hunters would target deer and black bears. Winter recreational activity is normally restricted by seasonal road deactivation and snow accumulation, although snowmobiling could occur on road systems or alpine areas. ATV, motorcycle and four wheel drive use of roads for recreation occurs to varying degrees. Trail hiking on established trails, berry picking and wildlife viewing/sight seeing also occurs. During the fall of each year a substantial amount of people gather to pick pine mushrooms commercially in the Nahatlatch.

Four Forest Service Recreation Sites exist within the Nahatlatch LU, three along the Nahatlatch River and one in lower Scuzzy Creek. All sites are popular and often fully occupied on summer weekends. There are two protected areas within the landscape unit. The Nahatlatch Provincial Park and Protected Area are predominantly linear in design following the Nahatlatch River and Lakes from Kookipi Creek upstream. Existing campsites along the lakeshores are maintained by BC Parks. The protected areas include some mature or old forest that will contribute to old forest requirements.

A few companies offer commercial river rafting trips on the Nahatlatch River throughout the summer months.

3.0 Nahatlatch Landscape Unit Objectives

The Nahatlatch LU was ranked as High biodiversity emphasis option through the biodiversity value ranking process completed earlier (see the *Vancouver Forest Region Landscape Unit Planning Strategy*, 1999). This High designation along with the BEC variant determines the percentage of the landscape unit's Crown forest land base that will be designated as OGMA. Table 2 outlines the total amount of OGMA required in each variant and from which Crown forest category (i.e. Non Contributing-NC; Timber Harvesting Land Base)[17]. The old growth target figures in Table 2 are derived from Appendix 2 in the *Landscape Unit Planning Guide*.

Table 2. Old growth management area (OGMA) requirements, Nahatlatch Landscape Unit.

BEC Variant & Natural Disturbance Type	Old Growth Target		Estab-lished OGMAs	OGMAs in Non-Contributing (NC)		OGMAs in Partial Contributing (PC)*		OGMAs in Contributing (C)		Old forest contribution from Parks or Protected Areas	
	%	Ha	Ha	%	Ha	%	Ha	%	Ha	%	Ha
CWHds1, 2	>13	202	209.2	21.9	45.9	16.2	33.8	26.0	54.3	35.9	75.2
CWHms1, 2	>13	1499	1505.5	72.4	1090.5	6.5	97.8	19.8	298.1	1.3	19.1
ESSFmw, 2	>13	1410	1411.8	87.7	1238.2	3.9	54.7	8.4	119.0	0	0
IDFww, 4	>19	2209	2210.9	80.6	1781.9	6.2	137.1	12.0	264.9	1.2	26.9
MHmm2, 1	>28	760	766.3	95.9	734.7	0.4	3.0	3.7	28.6	0	0
Total		6080	6103.7	80.1	4891.2	5.3	326.3	12.5	765.0	2.0	121.2

Note: Differences in totals are due to rounding.
CWHds1: Coastal Western Hemlock, dry submaritime, southern variant. NDT 2
CWHms1: Coastal Western Hemlock, moist submaritime, southern variant. NDT 2
ESSFmw: Engelmann Spruce-Subalpine Fir, moist warm subzone. NDT 2
IDFww: Interior Douglas-fir, wet warm subzone. NDT 4
MHmm2: Mountain Hemlock, moist maritime, leeward variant. NDT 1
A portion of PC and all of C form the Timber Harvesting Land Base (THLB)
* 32.6 ha of the 326 ha in PC is from the THLB. The remaining 293.7 ha are not part of the THLB.

To ensure that landscape level biodiversity values were represented across the landscape, OGMAs were established to the target in each BEC variant. The attached Nahatlatch LU map shows their distribution.

4.0 Nahatlatch OGMA Planning Results

4.1 Timber Harvesting Land Base Impact: After considering existing constraints to the land base and their contribution to OGMAs, a total of 798 ha from the THLB was identified as OGMA to achieve old growth retention targets. Of this total, 765 ha is from the Contributing land base. Some of the THLB areas captured in OGMA are considered inoperable by licensees or are remnants after logging (see Table 3 for additional details). Other contributing areas represent riparian reserve zones that are in

[17] NC forest land does not contribute to the Allowable Annual Cut. The Timber Harvesting Land Base (THLB) is made up of Contributing forests (C) and a portion of the Partially Contributing (PC) forests. Partially Contributing forests are "constrained" due to one or more of several factors such as poor soils or wildlife habitat, but are still partially available for harvest. Contributing forest is unconstrained and available for timber harvest.

fact unavailable for harvest. In all situations licensees were made aware of OGMA locations in the THLB. Licensee concerns were addressed wherever possible.

4.2 OGMA Age Classes: In the Nahatlatch Landscape Unit there was insufficient old forest (250+ years) in all BEC variants to meet OGMA targets. Therefore, it was necessary to designate mature stands as recruitment OGMAs. Approximately 33% of OGMAs were established within forests greater than 250 years old with another 56% established in mature stands between 141 to 250 years. The remaining 11% were located in stands aged 101 to 140 years in the IDFww due to a shortage of forest older than 140 years. The younger forests were chosen because of higher resource values (deer winter range) and to create larger patch sizes.

4.3 OGMA Summary: OGMA attributes together with a rationale for selection of OGMAs is described in Table 3 on the following pages.

TABLE 3:

Nathatlatch Landscape Unit: OGMA Summary and Rationale

OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
2	ESSFmw	N	30.5	0.0	riparian, avalanche chutes adjacent		suitable grizzly habitat
3	ESSFmw	N	2.3	0.0	adjacent to #2, beside avalanche chutes		suitable grizzly habitat
4	ESSFmw	N	3.4	0.0			suitable grizzly habitat
5	ESSFmw	N	19.9	0.0			suitable grizzly habitat
6	ESSFmw	N	48.4	0.0	larger patch		suitable grizzly habitat
8	ESSFmw	N	18.0	0.0	wetland, riparian		suitable grizzly habitat
9	ESSFmw	N	8.0	0.0	riparian		suitable grizzly habitat
10	CWH ms 1	C	0.3	0.3	gullied, riparian	inop, licensee recommended	
10	CWH ms 1	P	13.3	1.3	gullied, riparian	inop, licensee recommended	
10	ESSFmw	C	20.4	20.4	gullied, riparian	inop, licensee recommended	
10	ESSFmw	N	11.6	0.0	gullied, riparian	FDP block adjacent on NW side	
10	ESSFmw	P	23.3	2.3	gullied, riparian	inop, licensee recommended	
11	CWH ms 1	P	26.3	2.6	riparian	licensee recommended	
11	ESSFmw	N	0.7	0.0	riparian	licensee recommended	
11	ESSFmw	P	29.8	3.0		licensee recommended	
12	IDF ww	C	0.7	0.7	riparian gully		
12	IDF ww	N	9.4	0.0	riparian gully		
12	IDF ww	P	12.7	1.3	riparian gully		
14	CWH ds 1	N	9.7	0.0	riparian to upland link		bull trout in Log Cr
14	ESSFmw	N	12.4	0.0	riparian to upland link		
14	IDF ww	C	44.9	44.9	riparian to upland link		bull trout in Log Cr, DWR
14	IDF ww	N	53.0	0.0	riparian to upland link		bull trout in Log Cr
14	IDF ww	P	24.4	2.4	riparian to upland link		bull trout in Log Cr
15	IDF ww	N	16.6	0.0	Log Creek riparian		bull trout in Log Cr
16	CWH ms 1	C	0.7	0.7	valley bottom to upland link, forest interior		DWR below 1000 meters
16	CWH ms 1	N	10.1	0.0	valley bottom to upland link, forest interior		DWR below 1000 meters
16	ESSFmw	C	0.3	0.3	valley bottom to upland link, forest interior		
16	ESSFmw	N	80.4	0.0	valley bottom to upland link, forest interior		
16	IDF ww	C	44.6	44.6	valley bottom to upland link, forest interior		DWR below 1000 meters
16	IDF ww	N	226.5	0.0	valley bottom to upland link, forest interior		DWR below 1000 meters
16	IDF ww	P	3.3	0.3	valley bottom to upland link, forest interior		
17	IDF ww	N	5.6	0.0	valley bottom riparian		bull trout in Log Cr
18	IDF ww	N	12.0	0.0	remnant after fire		
21	IDF ww	N	5.6	0.0			
23	ESSFmw	N	6.4	0.0	#23-26 & 190 combine for larger patch		suitable grizzly habitat, avalanche chutes
24	ESSFmw	N	65.2	0.0	#23-26 & 190 combine for larger patch		suitable grizzly habitat, avalanche chutes
25	ESSFmw	N	2.6	0.0	#23-26 & 190 combine for larger patch		suitable grizzly habitat, avalanche chutes
26	ESSFmw	N	3.7	0.0	#23-26 & 190 combine for larger patch		suitable grizzly habitat, avalanche chutes
27	ESSFmw	N	114.0	0.0	large patch, forest interior		
27	IDF ww	N	33.2	0.0	large patch, forest interior		
28	IDF ww	C	24.4	24.4	part riparian gully		DWR in western part
28	IDF ww	N	31.6	0.0	part riparian gully		DWR in western part
29	ESSFmw	N	3.3	0.0	adjacent to #27		

TABLE 3:

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OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
30	IDF ww	N	13.3	0.0			DWR
31	IDF ww	C	0.4	0.4	large patch, forest interior, mostly recruitment		DWR
31	IDF ww	N	259.6	0.0	large patch, forest interior, mostly recruitment		DWR
32	ESSFmw	N	5.6	0.0	adjacent to #27		
33	ESSFmw	N	5.5	0.0	adjacent to #27, remnant after fire		
33	IDF ww	N	0.1	0.0	adjacent to #27, remnant after fire		
34	CWH ds 1	C	3.8	3.8			
34	CWH ds 1	N	19.5	0.0	valley bottom riparian, park		high fish values
34	CWH ds 1	P	29.0	2.9	partial park	FDP block adjacent on S side	
35	CWH ds 1	C	11.4	11.4	valley bottom to upland link, large patch, park		
35	CWH ds 1	N	12.6	0.0	valley bottom to upland link, large patch, park		
35	CWH ms 1	C	4.8	4.8	valley bottom to upland link, large patch		
35	CWH ms 1	N	48.1	0.0	valley bottom to upland link, large patch		
37	ESSFmw	N	1.0	0.0	remnant after fire, adjacent to #38		
37	IDF ww	N	2.8	0.0	remnant after fire, adjacent to #38		
38	ESSFmw	N	0.4	0.0	remnant after fire, adjacent to #37		
38	IDF ww	N	2.8	0.0	remnant after fire, adjacent to #37		
39	ESSFmw	N	3.9	0.0			
40	ESSFmw	N	20.7	0.0			
40	ESSFmw	P	1.4	0.1			
42	ESSFmw	N	2.1	0.0	large patch		partly DWR
42	IDF ww	N	74.8	0.0	large patch		partly DWR
43	ESSFmw	N	64.6	0.0	large patch		
43	IDF ww	N	2.3	0.0	large patch		
44	ESSFmw	N	4.8	0.0	remnant after fire		
44	IDF ww	N	4.0	0.0	remnant after fire		
45	ESSFmw	N	5.7	0.0			
46	ESSFmw	N	6.5	0.0			avalanche chutes adjacent
47	ESSF mw	N	6.4	0.0	shown as excluded but similar to rest of OGMA		
47	ESSFmw	N	15.4	0.0			
47	IDF ww	N	0.6	0.0			
48	ESSFmw	N	15.5	0.0			
49	ESSFmw	N	3.4	0.0	forest interior, riparian to upland link		DWR below 1000m
49	IDF ww	C	0.6	0.6	forest interior, riparian to upland link	*decrease size yng age class*	DWR below 1000m
49	IDF ww	N	91.9	0.0	forest interior, riparian to upland link		DWR below 1000m
50	CWH ms 1	N	5.2	0.0			
50	ESSFmw	N	1.0	0.0			
51	IDF ww	N	14.9	0.0	remnant after fire/harvest		
52	IDF ww	N	10.6	0.0	remnant after fire/harvest		
53	CWH ms 1	N	134.6	0.0	forest interior, riparian to upland link	FDP block adjacent on S side	bull trout in Kookipi Cr
53	ESSFmw	N	27.8	0.0	forest interior, riparian to upland link		
54	ESSFmw	N	6.6	0.0			
54	IDF ww	N	0.9	0.0			

TABLE 3:

Nathatlatch Landscape Unit: OGMA Summary and Rationale

OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
55	CWH ds 1	N	33.6	0.0	valley bottom to upland link, park, riparian gully		
55	CWH ms 1	C	8.9	8.9	valley bottom to upland link, riparian gully		
55	CWH ms 1	N	83.8	0.0	valley bottom to upland link, riparian gully		
55	CWH ms 1	P	14.6	1.5	valley bottom to upland link, riparian gully		
55	ESSFmw	N	72.5	0.0	valley bottom to upland link, riparian gully		
57	IDF ww	C	0.3	0.3	forest interior, riparian to upland link		DWR below 1000m
57	IDF ww	N	83.4	0.0	forest interior, riparian to upland link		DWR below 1000m
58	IDF ww	N	17.4	0.0	riparian, lake shore		
60	CWH ds 1	N	2.8	0.0	larger patch, riparian gully	FDP block adjacent on N, E sides	
60	CWH ds 1	P	4.8	0.5	larger patch, riparian gully	FDP block adjacent on N, E sides	
60	IDF ww	C	9.1	9.1	larger patch, riparian gully	licensee agreement, FDP block N, E sides	
60	IDF ww	N	2.1	0.0	larger patch, riparian gully	FDP block adjacent on N, E sides	
60	IDF ww	P	28.2	2.0	larger patch, riparian gully	licensee agreement, FDP block N, E sides	
61	IDF ww	N	130.0	0.0	large patch, forest interior		mostly DWR
62	ESSFmw	N	5.9	0.0	#62-65 combined, avalanche chutes between		
63	ESSFmw	N	1.0	0.0	#62-65 combined, avalanche chutes between		
64	ESSFmw	N	3.5	0.0	#62-65 combined, avalanche chutes between		
65	ESSFmw	N	10.7	0.0	#62-65 combined, avalanche chutes between		
65	IDF ww	N	4.7	0.0	#62-65 combined, avalanche chutes between		DWR below 1000m
67	IDF ww	N	3.1	0.0			
68	CWH ms 1	C	2.4	2.4	riparian between creek and road	FDP block adjacent on S side	bull trout in Kookipi Cr
68	CWH ms 1	N	10.7	0.0	riparian between creek and road	FDP block adjacent on S side	bull trout in Kookipi Cr
75	IDF ww	N	2.8	0.0	adjacent to # 61		avalanche chute
76	ESSFmw	N	41.2	0.0	large patch, forest interior	FDP block adjacent on NE side	
76	IDF ww	C	18.5	18.5	large patch, forest interior	licensee recommended	
76	IDF ww	N	51.8	0.0	large patch, forest interior	FDP block adjacent on NE side	
76	IDF ww	P	9.0	0.9		licensee recommended	
77	CWH ms 1	C	10.7	10.7	riparian		bull trout in Kookipi Cr
77	CWH ms 1	N	9.1	0.0	riparian		bull trout in Kookipi Cr
78	CWH ds 1	C	25.8	25.8	riparian to upland link (with adjacent park)		
78	CWH ds 1	N	13.4	0.0	riparian to upland link (with adjacent park)		
78	CWH ms 1	C	6.0	6.0	riparian gully with upland link		
78	CWH ms 1	N	31.0	0.0	riparian gully with upland link		
78	ESSFmw	N	38.0	0.0	riparian gully with upland link		
79	ESSFmw	N	21.0	0.0	riparian gully, adjacent to #80		avalanche chute adjacent
79	IDF ww	N	14.3	0.0	riparian gully, adjacent to #80		avalanche chute adjacent
80	ESSFmw	N	4.9	0.0	riparian gully, adjacent to #79		avalanche chute adjacent
80	IDF ww	N	7.6	0.0	riparian gully, adjacent to #79		avalanche chute adjacent
81	CWH ds 1	N	9.3	0.0	valley bottom riparian, mature cottonwood, park		high fish values
83	CWH ds 1	C	13.2	13.2	valley bottom riparian, mature cottonwood, park		high fish values
83	CWH ds 1	N	20.2	0.0	valley bottom riparian, mature cottonwood, park		high fish values
84	IDF ww	N	32.8	0.0	riparian gully along N bndry	FDP block adjacent on S side	
85	CWH ms 1	N	28.0	0.0	riparian to upland link		

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OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
85	ESSFmw	N	12.1	0.0	riparian to upland link		
86	IDF ww	P	33.8	3.4		FDP block adjacent on NE side	
87	CWH ms 1	N	6.9	0.0	riparian gully along W bndry		
91	ESSFmw	C	44.3	44.3	large patch, non-contiguous, riparian		
91	ESSFmw	N	62.7	0.0	large patch, non-contiguous, riparian		
91	ESSFmw	P	0.2	0.0	large patch, non-contiguous, riparian		
91	IDF ww	C	3.0	3.0	large patch, non-contiguous, riparian	FDP block adjacent on E side	some DWR below 1000m & S aspect
91	IDF ww	N	313.6	0.0	large patch, non-contiguous, riparian	FDP block adjacent on E side	some DWR below 1000m & S aspect
92	CWH ms 1	C	2.1	2.1	riparian gully along E bndry		
92	CWH ms 1	N	16.7	0.0	riparian gully along E bndry		
95	CWH ms 1	C	14.3	14.3	valley bottom riparian	FDP block adjacent on S side	bull trout in Kookipi Cr
98	CWH ms 1	N	9.0	0.0		FDP block adjacent on W side	
98	ESSFmw	N	19.3	0.0		FDP block adjacent on W side	
106	IDF ww	N	19.2	0.0	riparian gully	FDP block adjacent on N, S sides	
107	ESSFmw	N	5.3	0.0			
108	ESSFmw	C	20.7	20.7	large patch, forest interior, riparian		
108	ESSFmw	N	50.2	0.0	large patch, forest interior, riparian		
109	ESSFmw	N	2.4	0.0			
110	IDF ww	C	0.9	1.2	riparian gully	FDP block adjacent on N, S sides	
110	IDF ww	N	23.2	0.0	riparian gully	FDP block adjacent on N, S sides	
111	CWH ms 1	N	21.8	0.0		FDP block adjacent on W side	
111	ESSFmw	N	8.7	0.0		FDP block adjacent on W side	
112	CWH ms 1	C	2.3	2.3	riparian gullies		DWR S aspect of Brunswick and Gowen Cr
112	CWH ms 1	N	13.3	0.0	riparian gullies		DWR S aspect of Brunswick and Gowen Cr
112	ESSFmw	N	46.9	0.0	riparian gullies		DWR S aspect of Brunswick and Gowen Cr
112	IDF ww	C	71.1	71.1	riparian gullies		DWR S aspect of Brunswick and Gowen Cr
112	IDF ww	N	92.7	0.0	riparian gullies		DWR S aspect of Brunswick and Gowen Cr
112	IDF ww	P	22.3	2.2	riparian gullies	FDP block adjacent on S side	DWR S aspect of Brunswick and Gowen Cr
113	ESSFmw	C	3.9	3.9	valley bottom riparian, large patch		
113	ESSFmw	N	0.3	0.0	shown as ATp on map		
113	ESSFmw	N	102.0	0.0	valley bottom riparian, large patch		
115	CWH ms 1	C	127.9	127.9	valley bottom riparian to upland link, large patch	FDP block adjacent on E side	
115	CWH ms 1	N	105.3	0.0	valley bottom riparian to upland link, large patch	FDP block adjacent on E side	
115	CWH ms 1	P	28.8	2.9	valley bottom riparian to upland link, large patch	FDP block adjacent on E side	
117	IDF ww	C	0.9	0.9	riparian gully, Hallecks CWS	FDP block adjacent on S side	
117	IDF ww	N	24.9	0.0	riparian gully, Hallecks CWS	FDP block adjacent on S side	
118	ESSFmw	C	10.0	10.0	riparian gully along N bndry, Hallecks CWS		
118	ESSFmw	N	3.4	0.0	riparian gully along N bndry, Hallecks CWS		
119	CWH ms 1	C	4.1	4.1	riparian gully, Hallecks CWS	FDP block adjacent on E side	
119	IDF ww	C	0.2	0.2	riparian gully, Hallecks CWS	FDP block adjacent on E side	
121	CWH ms 1	C	0.1	0.1			
121	ESSFmw	C	18.0	18.0			
121	ESSFmw	N	0.4	0.0			

TABLE 3:

Nathatlatch Landscape Unit: OGMA Summary and Rationale

OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
122	CWH ms 1	N	0.3	0.0	#122-124 adjacent to avalanche chutes		
122	MH mm 2	N	2.5	0.0	#122-124 adjacent to avalanche chutes		
123	CWH ms 1	N	0.2	0.0	#122-124 adjacent to avalanche chutes		
123	CWH ms 1	P	0.1	0.0	#122-124 adjacent to avalanche chutes		
123	MH mm 2	N	4.0	0.0	#122-124 adjacent to avalanche chutes		
124	CWH ms 1	C	0.7	0.7	#122-124 adjacent to avalanche chutes		
124	MH mm 2	C	4.2	4.2	#122-124 adjacent to avalanche chutes		
124	MH mm 2	N	0.6	0.0	#122-124 adjacent to avalanche chutes		
125	CWH ms 1	N	37.7	0.0	larger patch	FDP block adjacent on E side	
125	ESSFmw	N	9.4	0.0	larger patch	FDP block adjacent on E side	
126	CWH ms 1	C	8.9	8.9	larger patch, riparian, cross elev linkage		
126	CWH ms 1	N	9.7	0.0	larger patch, riparian, cross elev linkage		
126	ESSFmw	C	1.4	1.4	larger patch, riparian, cross elev linkage		
126	ESSFmw	N	37.1	0.0			
126	MH mm 2	C	3.4	3.4			
126	MH mm 2	N	2.3	0.0			
129	IDF ww	C	1.9	1.9	valley bottom riparian, rock outcrop in middle		
129	IDF ww	N	1.1	0.0	valley bottom riparian, rock outcrop in middle		
129	IDF ww	P	3.3	0.3	valley bottom riparian, rock outcrop in middle		
130	CWH ms 1	N	0.9	0.0	remnant after fire	FDP block adjacent on N side	
130	IDF ww	N	17.0	0.0	remnant after fire		
131	MH mm 2	N	30.7	0.0	riparian wetland along E bndry		
132	CWH ms 1	C	2.5	2.5	riparian gully along W bndry		
132	CWH ms 1	N	10.8	0.0			
132	IDF ww	C	0.7	0.7	riparian gully along W bndry		
132	IDF ww	N	6.2	0.0			
133	MH mm 2	C	10.2	10.2	riparian gully bisects	licensee recommended	
133	MH mm 2	N	14.9	0.0	riparian gully bisects	licensee recommended	
135	MH mm 2	N	17.2	0.0	riparian headwaters		
137	CWH ms 1	N	22.5	0.0	larger patch	FDP block adjacent on SW, NE side	
137	ESSFmw	N	40.3	0.0	larger patch	FDP block adjacent on SW, NE side	
138	CWH ms 1	C	19.4	19.4	valley bottom riparian, long strip		
138	CWH ms 1	N	14.0	0.0	shows as excluded but is forested, riparian		
138	CWH ms 1	N	1.2	0.0	valley bottom riparian, long strip		
139	IDF ww	N	10.0	0.0	valley bottom riparian, narrow strip		
140	CWH ms 1	N	8.2	0.0	valley bottom riparian, partial upland link		
140	MH mm 2	N	50.4	0.0	valley bottom riparian, partial upland link		
141	CWH ms 1	C	40.2	40.2	valley bottom riparian, long/narrow strip, lrg patch	licensee recommended	partial DWR
141	CWH ms 1	N	49.8	0.0	valley bottom riparian, long/narrow strip, lrg patch		partial DWR
141	CWH ms 1	P	9.0	0.9	valley bottom riparian, long/narrow strip, lrg patch		
141	IDF ww	C	19.3	19.3	valley bottom riparian, long/narrow strip, lrg patch	licensee recommended	partial DWR
141	IDF ww	N	41.8	0.0	valley bottom riparian, long/narrow strip, lrg patch		partial DWR
141	IDF ww	P	0.1	0.0	valley bottom riparian, long/narrow strip, lrg patch		

TABLE 3:

Nathatlatch Landscape Unit: OGMA Summary and Rationale

OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
141	MH mm 2	N	2.1	0.0	valley bottom riparian, long/narrow strip, lrg patch		
142	CWH ms 1	N	16.9	0.0	larger patch		
142	MH mm 2	N	23.2	0.0	larger patch		
143	CWH ms 1	C	2.3	2.3		licensee recommended	
143	MH mm 2	C	5.2	5.2		licensee recommended	
143	MH mm 2	N	5.2	0.0		licensee recommended	
145	CWH ms 1	C	25.9	25.9	valley bottom riparian to upland link, large patch		
145	CWH ms 1	N	91.3	0.0	valley bottom riparian to upland link, large patch		
145	MH mm 2	C	1.8	1.8	valley bottom riparian to upland link, large patch		partial MGWR (mtn goat winter range) S end
145	MH mm 2	N	46.8	0.0	valley bottom riparian to upland link, large patch		partial MGWR (mtn goat winter range) S end
146	MH mm 2	N	23.9	0.0			
147	CWH ms 1	N	9.6	0.0	large patch, forest interior		
147	MH mm 2	N	79.9	0.0	large patch, forest interior		
148	MH mm 2	N	18.2	0.0	riparian to upland link	licensee recommended	
149	MH mm 2	N	38.8	0.0	harvested below OGMA bndry		
150	MH mm 2	N	23.8	0.0	riparian, adjacent alpine lakes		
151	CWH ms 1	N	6.6	0.0	riparian gully along N bndry		
151	IDF ww	N	8.7	0.0	riparian gully along N bndry		
152	CWH ms 1	N	3.8	0.0	#152, 156, 158 are adjacent, harvested below		
153	CWH ms 1	C	9.1	9.1		FDP block adjacent on N side	
153	CWH ms 1	N	0.6	0.0		FDP block adjacent on N side	
153	CWH ms 1	P	5.3	0.5		FDP block adjacent on N side	
153	MH mm 2	C	3.6	3.6		FDP block adjacent on N side	
153	MH mm 2	N	0.9	0.0		FDP block adjacent on N side	
153	MH mm 2	P	3.0	0.3		FDP block adjacent on N side	
156	CWH ms 1	N	3.2	0.0	#152, 156, 158 are adjacent, harvested below		
156	MH mm 2	N	0.6	0.0	#152, 156, 158 are adjacent, harvested below		
157	MH mm 2	N	22.9	0.0	part riparian gully, harv along lower bndry		
158	CWH ms 1	N	7.1	0.0	part riparian gully, adjacent to #152, 156.		
158	MH mm 2	N	0.3	0.0	part riparian gully, adjacent to #152, 156.		
159	CWH ms 1	N	34.8	0.0	larger patch, riparian gully		
159	CWH ms 1	P	0.1	0.0	larger patch, riparian gully		
159	MH mm 2	N	14.1	0.0	larger patch, riparian gully		
160	CWH ms 1	N	6.2	0.0	harvested along lower bndry		
160	MH mm 2	N	11.4	0.0	harvested along lower bndry		
161	CWH ms 1	N	10.6	0.0	part riparian gully		
162	CWH ms 1	N	11.2	0.0	larger patch, riparian gullies		MGWR at N end
162	MH mm 2	N	59.2	0.0	larger patch, riparian gullies		MGWR at N end
163	CWH ms 1	N	14.8	0.0	valley bottom riparian, remnant after harvest		
164	CWH ms 1	N	22.5	0.0	adjacent to excluded valley bottom riparian		suitable grizzly habitat in riparian
165	CWH ms 1	C	3.2	3.2	larger patch, harv along lower bndry		
165	CWH ms 1	N	11.0	0.0	larger patch, harv along lower bndry		
165	CWH ms 1	P	0.3	0.0	larger patch, harv along lower bndry		

TABLE 3:

Nathatlatch Landscape Unit: OGMA Summary and Rationale

OGMA #	BEC VARIANT	CONTRIB. CLASS	OGMA AREA	THLB AREA	COMMENTS	FDP	WILDLIFE
165	MH mm 2	C	0.2	0.2	larger patch, harv along lower bndry		
165	MH mm 2	N	40.8	0.0	larger patch, harv along lower bndry		
166	CWH ms 1	C	0.3	0.3	riparian corridor, partial upland link, large patch		
166	CWH ms 1	N	15.9	0.0	riparian corridor, partial upland link, large patch		
166	MH mm 2	N	69.4	0.0	riparian corridor, partial upland link, large patch	FDP block adjacent on NE side	
167	IDF ww	N	11.0	0.0	combines OGMA in Spuzzum LU for large patch		
168	CWH ms 1	N	84.4	0.0	forest interior, valley bottom riparian to upland link		good riparian wetland habitat
168	MH mm 2	N	29.2	0.0	forest interior, valley bottom riparian to upland link		good riparian wetland habitat
172	CWH ms 1	N	60.9	0.0	riparian headwaters, large patch		suitable grizzly habitat in riparian
172	MH mm 2	N	25.8	0.0	riparian headwaters, large patch		suitable grizzly habitat in riparian
173	CWH ms 1	N	3.9	0.0	riparian link with #168		
174	CWH ms 1	N	0.1	0.0	combines with #165		
174	MH mm 2	N	16.8	0.0	combines with #165		
175	CWH ms 1	N	0.2	0.0	large patch		
175	MH mm 2	N	42.6	0.0	large patch		
176	CWH ms 1	C	1.0	1.0			MGWR
176	CWH ms 1	N	5.2	0.0			MGWR
176	MH mm 2	N	4.9	0.0			MGWR
177	MH mm 2	N	11.3	0.0			
178	IDF ww	C	0.1	0.1	riparian gully	FDP block adjacent on N side	
178	IDF ww	N	7.4	0.0	riparian gully	FDP block adjacent on N side	
179	IDF ww	C	23.3	23.3	CWS, riparian	licensee recommended, FDP block adj to N side	
190	ESSF mw	N	11.4	0.0	riparian, combines with #22-26 for larger patch		suitable grizzly habitat

Appendix 6 – Summary of Public Comments

The Fraser Canyon Landscape Unit Plan was advertised for public review and comment for 60 days from June 6, 2002 to August 6, 2002. A summary of comments received and a response or how they were addressed follows:

1. **Do not agree with the need for OGMAs, enough constraints already on timber supply.** OGMAs are required to help meet government's commitment to maintain biodiversity values. Since biodiversity must be managed at various spatial scales, other constrained areas may not address biodiversity conservation at the needed level. For example, the OGMA initiative deals with the landscape scale, WTR at the stand scale, and protected areas provide biodiversity at the regional or sub-regional scale.

2. **Landscape Units should be larger (or combined) to free up more areas for harvesting and should use more constrained areas (e.g. parks) for OGMAs.** LU boundaries are based mostly on topographic features or watersheds according to previous direction, they also meet government guidelines for appropriate size. A second opportunity to review LU boundaries was given and no changes were recommended. Aggregating LUs into one large planning area would not meet the intent of OGMA planning at the landscape scale, OGMAs are to be distributed across the entire LU rather than lumped into a park in one portion of the area. OGMAs do use constrained areas as much as possible, and also select first from the non-contributing land base to reduce potential timber supply impacts.

3. **No economic impact analysis (i.e. timber supply) has been done, land base classifications are flawed and the impact is underestimated.** Provincial MOF Timber Supply Analysts performed an impact assessment in 1996 specifically to determine an impact for implementing the FPC, it is measured at the Regional and provincial scale. The rough estimate provided by MSRM for implementing this plan is within the estimate provided in 1996. Further, timber supply analysis is complicated and is done at the timber supply area scale, it is not possible to provide an accurate estimate at the landscape unit scale. MSRM will continue to provide rough estimates to the SDM and will strive to reduce impacts wherever possible. Land base classifications are based on the best information available, MSRM also met with licensees to identify future harvesting opportunities to reduce impact wherever possible.

4. **Road access through OGMAs for harvesting is a concern. Also there is no process to accommodate changes to OGMAs, such as operating near OGMA boundaries.** The first objective allows for road construction through OGMAs where there is no other practicable option. MSRM is developing a Regional Policy to deal with Amendments to OGMAs. Road access and operational issues are also dealt with in the Amendment policy.

5. **Parks should be utilized fully for OGMA designation.** Parks are used for OGMA on a proportional basis (e.g. if 40% of a variant in park is forested, then 40% of OGMAs go in park). Also, OGMAs are to be distributed across the landscape unit to ensure a broader range of ecosystems are represented.

6. **Parks should not be over represented in OGMA, and should not include park areas that are intensively managed.** Same answer as #5 above. MSRM believes this proportional approach strikes a balance between social, environmental and economic values. Areas within parks were chosen based on their value to old forest representation, MSRM avoided intensively managed park area (such as campgrounds).

7. **Landscape Units with High or Intermediate BEO designation should not have to achieve OGMA target requirements immediately. Instead young forest that is constrained (e.g. community watersheds) should be used to reduce impacts.** Risk to maintaining biodiversity has been maximized by implementing only priority biodiversity provisions and by establishing Low BEO in 45% of the Forest District. Maintaining biodiversity values in the remainder of the forest district by retaining the oldest available timber stands is critical.

8. **Not including low volume stands or short trees in OGMAs because they are not representative is viewed as another timber grab with little regard for economic impact.** The intent of OGMAs is to maintain forested stands that are representative of the overall timber stands within the BEC variant. Areas that remain outside of OGMAs are available for timber harvest.

9. **The relationship between the Legal Objectives and Background Report is unclear (e.g. it's not supposed to have legal weight yet the report gives some direction for implementing objectives).** Information in the report pertaining to implementation of objectives has been removed and placed in the Amendment Policy. Some other suggestions for minor word changes have also been incorporated.

10. **There appears to be discrepancy between map scales, for Compliance and Enforcement purposes 1:20000 is mentioned yet the advertised maps are at 1:90000 scale. This may cause problems for trespass.** The advertising maps are shown at 1:90000 scale but have been mapped using a 1:20000 scale base map. The 1:20000 scale base map forms the legal standard of measurement. Licensee responsibilities related to finding OGMA boundaries have been clarified in the report and Amendment Policy (e.g. professional accountability).

11. **Concern about buffers around OGMAs and isolating timber.** OGMAs do not require buffers around them. If a completed cutblock adjacent to an OGMA results in some timber remaining that is suitable for OGMA, then the retained area could be called WTP or the OGMA boundary may be moved to include the buffer in OGMA. This may free up other areas from OGMA. Isolating timber should not occur since in some cases roads will be permitted through OGMAs to harvest timber, in other cases helicopter harvesting would be most appropriate. Further, some young forest stands within OGMAs that are not currently included in OGMA may be included in the future as that stand ages and becomes suitable; in some instances the internal stand may be non contributing.

12. **Use of the term "practicable" versus "practical" in the legal objective.** MSRM will use "practicable" when determining what activities may be approved via amendment within an OGMA. The term practicable means that all relevant circumstances will be considered when evaluating

potential implications (e.g. social, environmental and economic values), whereas practical looks at economic costs and usefulness. A practicable evaluation is required within OGMAs since the main purpose of OGMAs is to maintain biological/ecological values.

13. **Concern over wording used in Legal Objectives, more clarification required.** Some of the concerns expressed will be addressed in the Amendment Policy. In addition, the Legal Objective wording has been altered in an attempt to make it more clear and measurable.

14. **Will WTR targets and audits be based on BEC subzone information collected from SPs/ground surveys or will it be based on the map themed BEC lines.** WTR targets will be based on the most accurate information available which will usually mean from SPs or ground surveys.

15. **How will the large OGMAs (28 are listed as a concern) be managed for risk regarding fuel loading.** Large OGMAs are required to provide forest interior habitat that would occur under natural conditions. This forest is critical for many sensitive species that depend on habitat away from forest edges. As well, fire is a natural occurrence in the Fraser Canyon landscape units that can be expected to occur periodically. Establishing OGMAs across the landscape is not expected to be substantially different than what would be there naturally.

16. **A list of 74 OGMAs that should be deleted or modified was provided together with a list of 38 forest cover polygons that should replace the ones deleted.** MSRM reviewed the list of OGMAs recommended for deletion or modification but was not able to determine which should be modified and which should be deleted. As well, deleting these areas would amount to hundreds of hectares in OGMA that was predominantly to be replaced with areas in park or Spotted Owl SRMZ. Making these changes is not possible since OGMAs are established to a target in each variant well distributed across the landscape. Putting all OGMAs in park would not result in well distributed old growth representation. Many of the OGMAs recommended for deletion are in the non-contributing land base or are already constrained by SRMZ or UWR, or were suggested by licensees; two were already in park. Individual polygons suggested for replacement could not be located due to insufficient information about map numbers. In some cases the replacement areas were younger forest or otherwise unsuitable.

17. **A list of 39 OGMAs that isolate timber internal or adjacent to the OGMA.** Many of these OGMAs are already in non-contributing or constrained areas. These polygons if operable could be harvested by helicopter or conventionally if a road was approved via amendment. In a few cases the isolated area was young forest that was not suitable for OGMA, it may be reviewed in the future as it ages. In one case the OGMA was in park.

18. **A list of 38 OGMAs that conflict with future road location, building landings or guyline clearance.** As mentioned building road or bridges in OGMA is possible provided that no other practicable option exists. Guyline clearance is exempt as per the objectives. Use of existing roads in OGMAs is allowed. Some of the OGMAs mentioned are in the non-contributing land base and two are in park.

19. **A list of 30 OGMAs that have irregular boundaries and pose a potential future windthrow risk.** Irregular boundaries that follow natural forest cover type lines or gully systems are expected to be more windfirm than straight line unnatural boundaries associated with cutblocks. Some windthrow within OGMAs is acceptable since downed trees would provide a source of CWD.

20. **Concern expressed that OGMA selection in Ainslie LU did not follow the Spotted Owl Management Plan direction to capture unprotected owl habitats. Recommend that a similar approach be done for spotted owls as was completed for Marbled Murrelets.** MSRM planning staff have reviewed the spotted owl management plan direction and determined that OGMA planning did follow policy direction by not incurring any additional timber supply impacts.

21. **Small patches of old forest have been included as OGMAs even though their size and lack of connectivity to other larger patches of old forest limits their usefulness for species dependent upon forest interior habitat. Patch size and connectivity as explained in the Biodiversity Guidebook should be priority considerations for designating OGMAs.** MSRM established OGMAs in a range of different patch sizes from small to large, forest interior habitat will be provided in larger patches. In some cases, natural forest composition consisted of forest interspersed with rock polygons that prevent forest interior habitat conditions. Connectivity was considered during delineation of OGMAs but was difficult to achieve due to the long harvest history in the Fraser TSA. In general, connectivity will be improved by establishing OGMAs in conjunction with spotted owl SRMZs.

22. **Lower elevation valley bottom stands are noticeably absent in the OGMAs shown, except where parks or riparian reserve zones currently exist. These areas should be included if the concepts of landscape connectivity and ecosystem biodiversity are to be met outside parks.** Low elevation valley bottom stands that are suitable candidates for OGMA (larger contiguous patch) are rare in this planning area due to an extensive harvest history. MSRM tried to capture these stands wherever possible.

23. **OGMAs should be selected from the most productive of the non-contributing stands (to ensure that OGMAs are representative of the entire variant).** During OGMA selection MSRM made sure that candidate stands were representative of the variant. Evaluation of stand attributes such as: vets, wildlife trees, multi-layered canopy, large trees, full stocking etc. helped to ensure that selected stands were representative. In addition, biological sufficiency reports will be one tool used to determine how OGMAs compare with average LU features such as slope, aspect, site index, tree species composition etc.