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[Date] 29 April 2008

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[Date] 29 April 2008

Disclaimer

Recognizing the special nature of management on a woodlot licence, this disclaimer forms part of the Woodlot Licence Plan (WLP) for Woodlot Licence Number W1641 and advises that:

- the decision to operate under one or more of the Default Performance Requirements provided in the Woodlot Licence Planning and Practices Regulation (WLPPR) is the sole responsibility of the woodlot licence holder, and involved no detailed oversight or advice from the prescribing registered professional forester,
- this disclaimer is signed on the explicit understanding and information provided by government that the use and achievement of a Default Performance Requirement meets the expectations of government with respect to the management of woodlot licences,
- the undersigned Registered Professional Forester certifies that this Woodlot Licence Plan and the supplemental information fulfills the standards expected of a member of the Association of British Columbia Forest Professionals and that I did personally supervise the work.

Signed _____ Seal:

Name (Print) Wolfram Wollenheit

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I. MANDATORY CONTENT FOR A WOODLOT LICENCE PLAN (WLP)

PLAN AREA

This plan covers the entire 418.8 ha included in Woodlot License W1641. The Crown portion of Woodlot Licence W1641 comprises an area totalling 398.8 ha. Located west of Campbell River and bisected by the Gold River Highway it borders Campbell Lake to the west and Little Echo Lake to the east. From the three separate access possibilities to the Crown portion of the Woodlot Licence the only public access is via the Gold River Highway. The other access options are via spur roads from the Elk River Mainline. Access to these spur roads requires passing through a TimberWest gate, which potentially could be locked after working hours.

The private land contribution to this Woodlot Licence consists of 20.4 ha and is composed of two separate parcels. The Williams Beach parcel is 3.59 ha and is located in Merville. The Cougar Cliff parcel is 16.81 ha and is located adjacent to the Gold River Highway near Upper Campbell Lake and Strathcona Lodge. Access to the Williams Beach portion is via Williams Beach Road. Access to the Cougar Cliff portion is through a 4x4 road originating near the Upper Campbell Lake Subdivision.

The terrain in the Woodlot Licence is variable. The Crown portion includes low-lying areas adjacent to wetlands and small lakes as well as steeper slopes and numerous rock bluffs towards the southeast. The Cougar Cliff area is characterized by steep, rocky terrain while the Williams Beach area is comprised of gentle slopes and easily accessible terrain.

Recent harvest activities carried out by the licensee can be characterized as commercial thinning, group selection and patch/clear-cut silvicultural systems. The objective of these harvesting operations is to manage for diverse conifer and hardwood stands while maintaining visual quality and biodiversity and improving stand stability, forest health and future stand value.

Recreational activity in the area includes fishing on Echo, Campbell and Upper Campbell Lakes as well as the harvesting of non-timber forest products and seasonal hunting throughout the Woodlot Licence area.

MAP AND INFORMATION

Table 1: Map and Information Content

Information Item	Map	Text	N/A
Forest cover	√		
Topography; (unless exempted by DM)	√		
Location of streams, wetlands and lakes as shown on forest cover maps, terrain resource inventory maps and fish and fish habitat inventory maps.	√		
Riparian classification of streams, wetlands and lakes if shown on maps	√		
Identification of fish streams	√		
Biogeoclimatic zones and subzones (unless exempted by DM)		√	
Public utilities (transmission lines, gas & oil pipelines, and railways)	√		
Existing roads	√		
Special Situations that may not Apply to the WL area			
Resource Management Zones, Landscape Units or Sensitive Areas	√	√	
Wildlife Habitat Areas (unless exempted by DM)			√
Scenic Areas	√	√	
Ungulate Winter Ranges			√
Community Watersheds		√	
Fisheries Sensitive Watersheds			√
Community and domestic water supply intakes that are licensed under the Water Act and any related water supply infrastructures			√
Contiguous areas of sensitive soils			√
Temporary or permanent barricades to restrict vehicle access	√	√	
Private property within or adjacent to the woodlot licence area	√		
Resource features other than wildlife habitat features and archaeological sites (unless the location of the resource feature is not to be disclosed)			√

All of the applicable information required to be addressed under section 8(1) of the Woodlot Licence Planning and Practices Regulation (WLPPR), and checked above, is discussed in the follwing text of this section and/or is identified on the WLP maps in Appendix 2, 3 and 4.

Biogeoclimatic Zones and Subzones

The Crown and Williams Beach portions of the Woodlot Licence are located within the Very Dry Maritime Variant of the Coastal Western Hemlock biogeoclimatic zone (CWH xm1) where the average rainfall can range from 1100 to 2721 mm/year. The Cougar Cliff portion of the woodlot license is within the CWH xm2. Much of the original forest cover on the woodlot was either burned in the 1938 Sayward fire or harvested via rail and cat around this time. The disturbance history has resulted in continuous areas of even aged Douglas fir with a scattered hemlock and cedar component. As well, there is a minor hardwood (alder) forest component to the woodlot. Some stands had been fertilized and spaced prior to the establishment of the woodlot licence.

Resource Management Zones, Landscape Units or Sensitive Areas

The Crown portion of the Woodlot Licence is located within Resource Management Zone 31 as described in the Vancouver Island Land Use Plan. This area is further covered by the Sayward Landscape Plan, which is an approved landscape unit plan. The Cougar Cliff and Williams Beach portions are located in the Upper Campbell and Tsolum Landscape Units respectively. Neither of these landscape units is covered by approved landscape unit plans and thus the only applicable higher-level plan for these portions is the Vancouver Island Land Use Plan.

Scenic Areas

As identified in the Sayward Landscape Unit Plan, the Crown portion of the woodlot license area contains areas with retention and partial retention visual quality objectives (VQOs). See 'Areas Where Timber Harvesting Will be Modified' in this plan for management strategies relating to visual quality objectives.

Community Watersheds

No part of the Woodlot Licence is located within a community watershed. However, part of the woodlot licence Crown portion is within risk zone B and risk sub-zone B1 as defined in the watershed management plan of the municipal District of Campbell River. See 'Areas Where Timber Harvesting Will be Modified' in this plan for management strategies relating to the Campbell River Community Watershed risk zone.

Licensed Water Supply Intakes and Infrastructures

There are no licensed water supply intakes or associated infrastructure within the Woodlot Licence area.

Temporary or permanent barricades to restrict vehicle access

Permanent barricades to restrict vehicle access to both the private and Crown portions have been established at the main entrance to the Woodlot Licence areas as indicated on the WLP maps (Appendices 1,2 and 3). The purpose of these installations is to reduce the risk of fire, minimize firewood theft, vandalism and prevent garbage dumping. The gates erected at the entrances to the private portions also protect further property rights as they access additional private land not included within the woodlot licence.

Other features and resource values relevant to the management of the Woodlot Licence not mentioned specifically in the text above are indicated on the attached maps (Appendices 1,2 and 3).

AREAS WHERE TIMBER HARVESTING WILL BE AVOIDED

There are no areas in this Woodlot Licence where timber harvesting will be strictly avoided.

AREAS WHERE TIMBER HARVESTING WILL BE MODIFIED

Areas in this Woodlot Licence where timber harvesting will be modified to protect and manage resources are shown on the map by shading, hatching or lines.

☒ Riparian reserve zones (RRZs) and wildlife tree patches (WTPs) are not planned for regular harvesting other than that specified by regulation, such as tree removal for the purpose of creating trails or for carrying out a sanitation treatment. These areas include reserve zones allocated to streams and wetlands and those areas designated or projected as WTPs. RRZs and WTPs are denoted in light red shading on the map.

☒ Riparian Management Zones: The table below (Table 2) outlines how timber harvesting will be modified based on the stream and lake classification. Depending on the present stand structure, terrain, windthrow risk and block configuration the retention level will be uniform, grouped or spatially distinct. In general, understory and unmerchantable cedar and other conifers of good form and vigour will be maintained wherever possible to meet the intent of riparian area management for all stream and wetland classifications. RMZs are denoted in light green diagonal hatching on the map.

Table 2: Modification of Harvesting in RMZs by Riparian Classification

RIPARIAN CLASS	INTENT OF MANAGEMENT	SPECIES TO RETAIN	RETENTION LEVEL POST HARVEST (stems/ha)
S3 (Fish bearing or Community Watershed) S3 =1.5 - 5.0m)	• Maintain the integrity of the RRZ • Assist in maintaining wildlife attributes within the RMA, such as wildlife tree cover, nesting and perching habitat and diversity of vertical forest structure.	**Fd, Cw, Hw, Pl, Dr and Ac**	**25 - 100%**
S4 (Fish bearing or Community Watershed) up to 1.5m)	• Maintain stream bank integrity • Provide shaded cover, LWD and litter		**25 - 100%** within 10 m of channel retain 50% of stems, representative of species, age and size
S6 (non-fish ≤3m) Crown portion only	• Minimize debris transport to lower reaches of stream		**0 - 100%**
Lake and Wetlands	• Maintain the integrity of the RRZ • Assist in maintaining wildlife attributes within the RMA, such as wildlife tree cover, nesting and perching habitat and diversity of vertical forest structure.		**25 - 100%**

Fd = Douglas fir, Cw = western red cedar, Hw = western hemlock, Pl = lodgepole pine, Dr = red alder, Ac = cottonwood

☒ Scenic Areas: To ensure harvest areas are managed to be consistent with the retention (R) and partial retention (PR) visual quality objectives (VQOs) large openings will follow the line and form of the landscape. Innovative visual forestry techniques such as screening and green-up sequencing will be used to reduce visual impacts along highways and other foreground situations. The assessment procedures outlined in the Visual Impact Assessment Guidebook 2001 may be used to direct design and assist in evaluation, whereby the categories of visually altered forest landscapes are defined as:

(a) *preservation*: consisting of an altered forest landscape in which the alteration, when assessed from a significant public viewpoint, is
- (i) very small in scale, and
- (ii) not easily distinguishable from the pre-harvest landscape;

(b) *retention*: consisting of an altered forest landscape in which the alteration, when assessed from a significant public viewpoint, is
- (i) difficult to see,
- (ii) small in scale, and
- (iii) natural in appearance;

(c) *partial retention*: consisting of an altered forest landscape in which the alteration, when assessed from a significant public viewpoint, is
- (i) easy to see,
- (ii) small to medium in scale, and

(iii) natural and not rectilinear or geometric in shape;

(d) *modification*: consisting of an altered forest landscape in which the alteration, when assessed from a significant public viewpoint,

(i) is very easy to see, and

(ii) is

(A) large in scale and natural in its appearance, or

(B) small to medium in scale but with some angular characteristics;

(e) *maximum modification*: consisting of an altered forest landscape in which the alteration, when assessed from a significant public viewpoint,

(i) is very easy to see, and

(ii) is

(A) very large in scale,

(B) rectilinear and geometric in shape, or

(C) both.

☒ Recreation: The Ministry of Forests' recreation inventory information pertaining to the WLP area is summarized in the following table (Table 3) and the polygon numbers are shown on the WLP map. No recreation polygons or attributes are included for the private portion of the woodlot.

Polygon number 2969 adjacent to Campbell Lake is classed as having very-high feature significance and a high sensitivity to development. This polygon is approximately congruent with the area shown in the Sayward Landscape Plan as 100% Recreation Netdown polygon. The primary recreational activity in this polygon is fishing from shore. Any harvesting within this polygon will be guided by the RVQO guidelines and will be designed to minimize impacts on recreational significance. Potential silvicultural systems to be used include patchcuts, commercial thinning and group selection. Future harvesting proposals within this polygon other than right of way maintenance require the approval of the district manager of the Campbell River Forest District.

Significance and sensitivity classes for all other recreation inventory polygons within the woodlot license area are either moderate or low. Normal woodlot forest management with respect to established VQOs is sufficient to manage the recreation resource in these polygons.

Table 3: Recreational Resource Inventory for the Woodlot Licence W1641

Mapsheet / Polygon #	Prominent Feature	Significance	Sensitivity	Impact Management
92F 093 / 2969	Coniferous forest and shore land adjacent to Campbell Lake.	VH	H	Development activities designed to maintain the recreational significance and visual quality.
92F 093/ 2976	Coniferous forest and shore land adjacent to Campbell Lake.	M	M	Development activities guided by VQOs with consideration to recreational significance.
92F 093 / 2927	Coniferous forest slightly upland from Campbell Lake.	L	L	Normal woodlot forest management.
92F 093 / 2973	Small wetland near Campbell Lake with upland bird habitat.	M	M	Normal woodlot forest management.
92F 093 / 2985	Coniferous forest.	L	L	Normal woodlot forest management.
92F 093 / 3002	Coniferous forest with areas of exposed bedrock.	L	L	Normal woodlot forest management.
92F 093 / 3018	Coniferous forest with areas of exposed bedrock.	L	L	Normal woodlot forest management.
92F 093 / 2990	Coniferous forest with areas of exposed bedrock.	L	L	Normal woodlot forest management.

☒ Watershed Risk Zone B: The regular forest management practices under the current forest and environmental legislation are sufficient to minimize the risk of pollution and contamination of the John Hart Lake water intake.

Watershed Risk Subzone B1: Within 100m of the Lower Campbell Lake the refuelling of large machines is prohibited. Further, the forestry practice of fertilization and the application of chemicals will not be conducted within Subzone B1. In general, a no-pesticide use policy is implemented in this Woodlot Licence.

PROTECTING AND CONSERVING CULTURAL HERITAGE RESOURCES

Woodlot 1641 lies within the traditional territories of three First Nations. A list of these First Nations and their contact information is provided within Part II-1, 'Review and Comment'. In addition to the information sharing process that is implemented for the approval of this plan, First Nations and other interested parties are welcome during the term of this plan to review planned developments upon their own initiative. Documentation of all consultation with First Nations is to be included within the supplemental information (Part II) of the final submission of this plan.

The latest Archaeological Overview Assessment (AOA), also called archaeological site potential assessment, has been prepared in March 2007 under the consideration of previous AOAs. The result is that: "The absence of old growth western redcedar in the Woodlot Licence precludes the potential for the presence of CMTs. W1641 is deemed to have low potential for the presence of archaeological sites based on the aforementioned criteria [distance to coastal shoreline]. No further archaeological work is recommended for W1641".

However, if the licensee or any personnel from the woodlot licensee finds evidence of traditional use[1] or cultural heritage values, the Ministry of Forests Aboriginal Liaison Officer and relevant First Nations representative will be notified and all work will cease within the immediate (30 m) area. The licensee will cooperate fully, as requested by the Ministry of Forests Aboriginal Liaison Officer.

The following results and strategies (Table 4) for managing cultural heritage values will apply. These are based on known cultural heritage issues of interest to First Nations in the Campbell River Forest District.

[1] A forest resource use traditionally exercised by a First Nations people

Table 4: Results and Strategies for Cultural Heritage Resources

Cultural Heritage Value	***Results & Strategies***
Cedar:	***Result:*** • Enable continued access to red cedar for traditional use by local First Nations.
	Strategies: • Based on availability of stock and ecological suitability (e.g. Cw listed as preferred species), a component of Cedar will continue to be planted in the woodlot to ensure a long-term supply. • Naturally occurring young cedar trees (including poles) will be retained where operationally practicable. • Access will be allowed to monumental cedar trees for traditional use by local First Nations. There are currently no known monumental cedar trees within the woodlot but the aforementioned recruitment strategies will allow opportunities for future generations.
Traditionally Used Plants:	***Result:*** • Enable continued access to traditionally used plants for traditional use by local First Nations.
	Strategies: • When local First Nations have indicated specific interest in traditional use plants, the licensee will identify the presence of such plants in planned harvest areas and communicate this to the interested First Nations prior to cutting permit submission. This is to allow for review by the local First Nations and for the collection of traditional use plants by local First Nations prior to harvest. Interested local First Nations will also be notified of traditionally used plants, particularly those indicated to the licensee as scarce or not abundant, if identified on the Woodlot Licence area. • A no-pesticide use policy is implemented in this Woodlot Licence. Manual brushing and early planting of large stock is the preferred method to overcome brush problems.
Cultural Heritage Resources	***Result:*** • Harvest plans will consider identified cultural heritage resources.
	Strategies: • The Licensee will share information with local First Nations upon request and be available for field reviews.

WILDLIFE TREE RETENTION STRATEGY

Note: The proportion of the Woodlot Licence area that is occupied by wildlife tree retention areas is specified in the "PERFORMANCE REQUIREMENTS" section of this Woodlot Licence plan.

INDIVIDUAL WILDLIFE TREES

a) Species and Characteristics:

Desired species are (in order of preference): Fd, Cw, Hw, Pl, Dr, and Ac with a minimum dbh of 50cm. The following table describes the species and characteristics of individual trees that will guide the selection of wildlife trees to be retained from harvesting.

Table 5: Wildlife Tree Value and Characteristics for All Species

CHARACTERISTICS	HIGH (at least two of the listed characteristics)	MEDIUM	LOW
	• Internal decay (heartrot or natural/excavated cavities present) • Crevices present (loose bark or cracks suitable for bats) • Large brooms present • Active or recent wildlife use • Current insect infestations • Tree structure suitable for wildlife use (e.g. large nest, hunting perch, bear den, etc.) • Largest tree on site (height and/or diameter) and/or veterans • Locally important wildlife tree species	• Large, stable trees that will likely develop two or more of the characteristics listed under HIGH	• Trees not covered by HIGH or MEDIUM categories

From: Wildlife Tree Committee recommendations available at: http://www.for.gov.bc.ca/hfp/wlt/wlt-policy-02.htm

Given the nature of the historic logging and the thrifty second-growth stands present in the Woodlot Licence area few trees in a given stand may have 'high' value attributes. One tree per hectare will be the minimum threshold for retention with preference given to trees onsite with the highest wildlife value. Trees may be left as dispersed individuals or as a groups either internally or externally to harvest areas.

Additionally, cottonwood will be retained where worker safety permits.

Conditions under which Individual Wildlife Trees may be Removed:

The following specific conditions will influence the decision of where individual wildlife trees may be removed:

- worker safety;
- the significance of forest health risk to surrounding stands;
- the ability to retain other wildlife trees to perform as suitable wildlife habitat; and
- the availability of wildlife trees and CWD in adjacent areas.

Unsafe high value wildlife trees will be protected by no-work zones or re-design of cutblock or road configuration if they exhibit a combination of the following characteristics: wildlife tree value category HIGH applicable, DBH > 50 cm, wildlife tree class 2 – 8, > 20 m high, conks or decay present, wildlife use present (nesting, cavities, recent feeding, denning), species Fd, Cw, Hw, Pl, Dr or Ac. All workers involved with the removal of potential wildlife trees will be informed of applicable standards prior to fieldwork to help mitigate unnecessary removals.

b) Replacement of Individual Wildlife Trees:

Individual trees will be replaced if they are of 'high' wildlife value. Replacement trees will be selected using criteria outlined above with a preference for selecting trees that have two or more high wildlife tree value characteristics.

WILDLIFE TREE RETENTION AREAS

a) Forest Cover Attributes:

Wildlife tree patches (WTPs) are preferentially located in fully constrained areas for long-term retention (e.g. riparian reserve zones (RRZs). The minimum proportion of the Woodlot Licence area for long-term WTPs retention is 33.5 ha (8.0%) as per Section 52(1) of the WLPPR. The presently allocated WTPs and RRZs for W1641 are shown on the 1:5000 WLP maps (Appendices 1, 2 and 3) and occupy 34.3 ha or approximately 8.2% of the Woodlot Licence area. Given the shape of the Woodlot Licence and the presence of the natural features, the distribution and characteristics of the wildlife tree patches correlate with the FPC biodiversity guidebook recommendations (Sept 1995) and the Ecological Guiding Principles proposed by the Wildlife Tree Committee. The WTPs include some representative larger trees (DBH > average operational cruise) with moderate to high value to wildlife and regenerating stands with future wildlife potential. A list of presently allocated WTPs and their attributes are detailed in the table in Appendix 5.

The size, shape and location of the presently shown WTPs is subject to change upon further engineering work. Creek classification for the Crown portion of the woodlot has been completed. Final mapping and location of WTPs adjacent to cutblocks will be shown with the submission of pre-harvest mapping required by Section 33 of the Woodlot Licence Planning and Practices Regulation (WLPPR).

Through on-going observation, there will be potential for identifying and locating nesting trees, and other important habitat trees for retention and additional wildlife tree patches. No nesting sites or bear dens requiring specific habitat or tree retention have been identified to date.

b) Conditions Under which Trees may be Removed from Wildlife Tree Retention Areas:

The goal is to maintain all stems within streamside reserves and WTPs. However, the following stand-specific issues will influence the decision of where salvage may be appropriate for WTPs include:

- worker safety;
- the significance of forest health risk to surrounding stands;
- the ability of the retained wildlife trees to perform as suitable wildlife habitat; and
- the availability of wildlife trees and CWD in adjacent harvest areas.

Salvage of windthrown timber is permitted within WTPs where it is not within the RRZ and where windthrow impacts 25% to 50% of the dominant or co-dominant stems. Salvage of windthrown timber and harvesting of remaining standing stems is permitted within WTPs where windthrow exceeds 50% of the dominant or co-dominant stems; or where forest health issues pose a significant threat to areas outside the WTP.

Individual trees may be felled but not removed if considered a safety hazard.

c) Replacement of Trees Removed from Wildlife Tree Retention Areas:

Given the nature of the adjacent stands and existing WTPs, the felling of danger trees within a distance from harvest edges as defined in the specific cutting authority will not be a common occurrence or threaten the long-term integrity and usefulness of the WTPs. As such, no strategy for the specific replacement of individual trees within WTPs is presented.

Where salvage/harvesting is planned and authorized within a non-RRZ wildlife tree patch, a suitable replacement WTP of at least equivalent quality will be identified concurrently to achieve the retention target. Where all or part of a WTP is salvaged, the salvaged area should be replaced with other suitable habitat in the nearest possible location. If a WTP suffers windthrow, but is not salvaged, it needs not be replaced. Replacement areas must have equal or better wildlife values. For non-riparian WTPs, attempts will be made to incorporate important features such as snags, marking, perch and nesting trees, dens, and other significant wildlife features.

MEASURES TO PREVENT INTRODUCTION OR SPREAD OF INVASIVE PLANTS

The introduction or spread of invasive plants, specifically scotch broom, into the Woodlot Licence area through the use of standard practices is possible.

In the event that scotch broom becomes established, other than along Highway 28, Argonaut Mainline and the Elk River Mainline, it will be brushed repeatedly and the area re-vegetated. Vehicle access is restricted via gates on both the private and Crown portions. Where it is known or reasonably expected that machinery will be transported from a contaminated site, on or off the woodlot, cleaning of tires, tracks, buckets, undercarriage, etc. will be completed prior to transportation. All newly constructed roads will be grass seeded if scotch broom establishment becomes a concern. Seed mixtures used for the above purposes or for those under Section 29 of the WLPPR will be assessed to ensure that their use does not introduce additional invasive species. Additional species listed in the Invasive Plants Regulation (reg. 18/2004) will be managed accordingly if identified and located on the woodlot.

MEASURES TO MITIGATE EFFECT OF REMOVING NATURAL RANGE BARRIERS

There are no rangelands present on or adjacent to the Woodlot Licence and no measures or activities are proposed.

STOCKING INFORMATION FOR SPECIFIED AREAS

☒ Alternative: The stocking information for specified areas are found in Appendix 6

Specified areas include:

- areas subject to commercial thinning,
- the removal of individual trees, or
- areas subject to single/group tree selection or
- other types of intermediate cutting and /or
- areas subject to the harvest of special forest products.

For the purposes of this plan, commercial thinning, the removal of individual trees, group selection, intermediate cutting or the harvest of special forest products may take place anywhere within the woodlot except in designated areas where harvesting will be avoided. The delineation of specific areas will be conducted in conjunction with the pre-harvest mapping as per Section 33 of the WLPPR.

PERFORMANCE REQUIREMENTS

SOIL DISTURBANCE LIMITS

☒ Alternative - WLPPR s.24(1)(a):

8% of Net Area to be Reforested ***except***

a) up to a maximum of 30% in localised areas (standard unit basis) requiring site preparation for brush or root rot control. In root-rot areas with suitable soils destumping may be prescribed to control the spread of infection. In areas dominated by heavy salal or salmonberry a light soil raking using an excavator mounted brush rake may be prescribed to disturb salal/salmonberry roots. This will create more plantable spots and facilitate seedling establishment and achieve early brush control. The objective of this treatment is to minimize brush competition during seedling establishment and to create a mixed substrate of soil and forest floor, not a complete removal of the forest floor. These treatments may result in dispresed scalps and gouges.

b) up to a maximum of 15% in wet site units with fluctuating water tables or prolonged periods of standing water in the winter (CWHxm 11, 12, 13, 14, 15). In these areas 400-600 mounds per ha may be created (where prescribed) using an excavator bucket to create suitable micro sites. This will result in dispersed deep gouges.

Further rationale is provided in the supplementary information included in this plan. See Section II - 4.

PERMANENT ACCESS STRUCTURES

☒ Default: WLPPR s.25:

The maximum area occupied by permanent access structures is as follows:

- Cutblocks ≥ 5 ha – 7% of cutblock area
- Cutblocks < 5 ha – 10% of cutblock area
- Total Woodlot Licence Area – 7% of Woodlot Licence area

USE OF SEED

☒ Default - WLPPR s.32:

Adoption of Chief Forester's Standards for Seed Use.

STOCKING STANDARDS

☒ Alternative - WLPPR s. 35(1)(a):

The stocking standards, regeneration dates and free growing dates are detailed in Appendix 6. Clarification and rationale is provided in the supplementary information included with the plan. See Section II - 4.

WIDTH OF STREAM RIPARIAN AREAS

☒ Alternative - WLPPR s.36(4)(a):

In general the width of stream riparian areas will be as specified in Section 36(4) of the WLPPR. However, there are several variations due to road location constraints. The following riparian area widths are reduced to the distance from the streambank edge to the lower edge of the fill slope for the roads and trails indicated below.

- Creek 4 RMA to L310 and to TR305
- Supply Creek RMA to L200, to TR7-1 and to a future trail leading along the east shore of Lake 2 (existing grade)
- Creek 9 RMA to L200
- Creek 12 RMA to L240 and to TR 243
- Creek 14 RMA to L200, toTW250, to TR242, and to L500E
- Creek 17 RMA to TR150
- Creek 17a RMA to L500W
- Creek 20 RMA to C820 and to C821
- Creek 22 RMA to C810 (Echo Creek FSR)

The RMA width is shown on the WLP map for illustration purposes only; the actual width is based on field measurement according to the Riparian Management Guidebook. Clarification and rationale for the RMA reductions is provided in the supplementary information included with the plan.
See Section II - 4.

WIDTH OF WETLAND RIPARIAN AREAS

☒ Alternative - WLPPR s.37(3)(b):

In general the width of wetland riparian areas will be as specified in Section 37(3)(b) of the WLPPR. However, there are several variations due to road location constraints. The following riparian area widths are reduced to the distance from the wetland edge to the lower edge of the fill slope for the roads and trails indicated below.

- Wetland 3 RMA to TR110
- Wetland 4 RMA to L300 and to TR110
- Wetland 8 RMA to C810 (Echo Creek FSR)

The RMA width is shown on the WLP map for illustration purposes only; the actual width is based on field measurement according to the Riparian Management Guidebook. Clarification and rationale for the RMA reductions is provided in the supplementary information included with the plan.
See Section II - 4.

WIDTH OF LAKE RIPARIAN AREAS

☒ Alternative - WLPPR s.38(2)(b):

In general the width of lake riparian areas will be as specified in Section 38(2)(b) of the WLPPR. However, there are several variations due to road location constraints. The following riparian area widths are reduced to the distance from the lake edge to the lower edge of the fill slope for the roads and trails indicated below.

- Lake 2 RMA to future trail along east shore of lake (existing grade)
- Lake 3 to TR110
- Little Echo Lake to future access road to block 2c

The RMA width is shown on the WLP map for illustration purposes only; the actual width is based on field measurement according to the Riparian Management Guidebook. Clarification and rationale for the RMA reductions is provided in the supplementary information included with the plan.
See Section II - 4.

RESTRICTIONS IN A RIPARIAN RESERVE ZONE

☒ Alternative: WLPPR s.39

- Cutting, modifying or removing trees in a riparian reserve zone is limited to the purposes described in Section 39(1) of the WLPPR and the establishment of the road right of way of Road L220 and an access road into Block 2c
- For the purpose of Section 39(2.1) of the WLPPR, the following roads may be constructed in a riparian reserve zone:
  Road L220 and an access road into Block 2c along and across Creek 11.

RESTRICTIONS IN A RIPARIAN MANAGEMENT ZONE

☒ Alternative: WLPPR s.40

- Construction of a road in a riparian management zone is limited to the conditions described is Section 40(1) of the WLPPR.
- For the purpose of Section 40(1)(a) of the WLPPR, roads may be constructed in a riparian management zone if a road grade previously existed in this location and it is more practicable to re-establish the road on the old grade.
- Restrictions and conditions on road construction, maintenance and deactivation activities, and on cutting, modifying or removing trees in a riparian management zone are as described in Section 40.

WILDLIFE TREE RETENTION

☒ Default - WLPPR s.52(1):

The proportion of the Woodlot Licence area that is occupied by wildlife tree retention areas is no less than the least of the following:

- The proportion specified for the area in a land use objective, or
- The proportion specified in the WLP, or
- 8%

Note: The proportion of the Woodlot Licence area that is presently occupied by projected wildlife tree retention areas is currently at 34.3 ha (8.2%).

COARSE WOODY DEBRIS

☒ Default - WLPPR s.54(1):

Area on Coast – minimum retention of 4 logs per ha ≥ 5 m in length and ≥30 cm in diameter at one end.

RESOURCE FEATURES

☒ Default - WLPPR s.56(1):

Ensure that forest practices do not damage or render ineffective a resource feature.

****

Note: Only the performance requirements in Part 3 (Practice Requirements) of the WLPPR for which an alternative can be proposed are shown in this Woodlot Licence Plan. The remaining performance requirements in Part 3 are not shown, nor are the performance requirements in Part 4 (Roads).

APPENDICES

Appendix 1: Woodlot Licence Location Map

Licensee:	TrueWood Forests Ltd.
Forest Region:	Coast
Forest District:	Campbell River
Area:	398 ha
Reference Map:	92F093
Datum, UTM Zone:	NAD 83, 10
UTM:	326 500E 5539 000N
TSA:	37 Strathcona
TSB:	A Sayward
FIZ:	B
P.S.Y.U.:	235
Inv. Reg.:	7
Comp.:	1B
Airphoto:	BCB 91039
Drafted:	Feb 2, 2008
By:	ECON

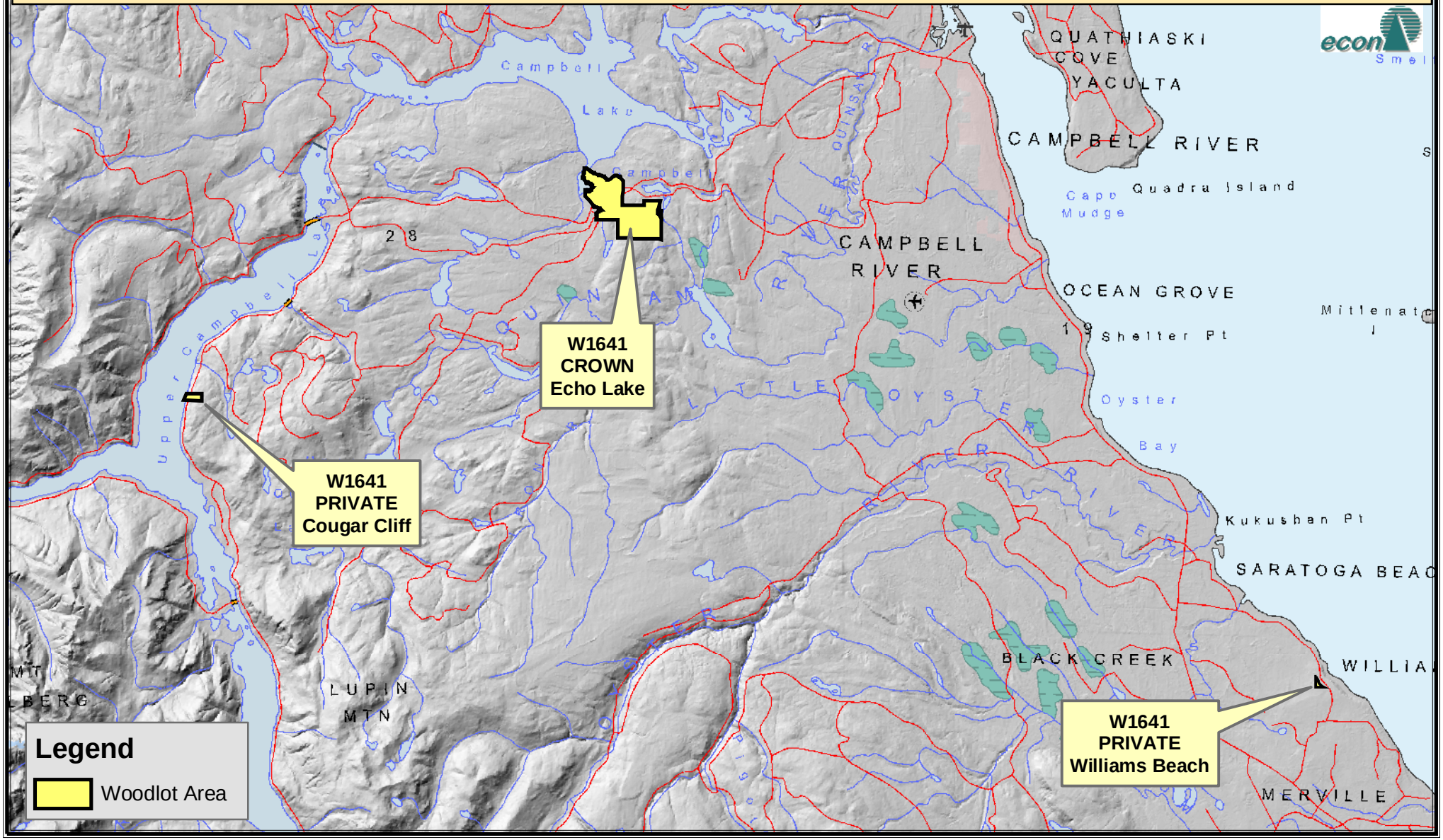
Woodlot Licence W1641 Echo Lake

TrueWood Forests

Location Map

Decl. 19°05'E (2006)
Ann. Change 0.13'W

1:200,000
Meters
0 2,500 5,000



Appendix 2: Woodlot Licence Plan Map (Crown Portion)

Woodlot Licence W1641 Echo Lake

TrueWood Forests

Woodlot Licence Plan

CROWN

Timber West Private

Former Timber West Camp 8

Timber West Private

CROWN

W1675

W0082

CROWN

CROWN

Constrained for Rec. Mgmt

Old Growth

Mesa

Blk 1a Blk 1b Blk 1c Blk 2a Blk 2b Blk 2c Blk 3 Blk 5 Blk 6 Blk 7 Blk 8 Blk 9 Blk 10 Blk 11 Blk 12 Blk 13 Blk 14 Blk 15 Blk 16 Blk P1 Blk P2 Blk P5 Blk P6

Elk River M/L

Gold River Highway

Campbell Lake L1

Echo Lake L1

Little Echo Lake L1

Lake 1 L2

Lake 2 L4

Lake 3 L2

Lake 4 L2

Lake 5 L4

Lake 6 L4

Wetland 1 W1

Wetland 2 W4

Wetland 3 W2

Wetland 4 W2

Wetland 5 W2

Wetland 6 W4

Wetland 7 W4

Wetland 8 W1

NCL Lake 4

Decl. 19°05'E (2006)
Ann. Change 0.13'W

1:5,000

0 2550 100 150 200 Meters

326 455E 5539 913N UTM10
1041 526E 552 427N BC Albers
125°25'16"W 49°59'11"N Geographic

Licensee:	TrueWood Forests Ltd.
Forest Region:	Coast
Forest District:	Campbell River
Area:	398 ha
Reference Map:	92F093
Datum, UTM Zone:	NAD 83, 10
UTM:	326 500E 5539 000N
TSA:	37 Strathcona
TSB:	A Sayward
FIZ:	B
P.S.Y.U.:	235
Inv. Reg.:	7
Comp.:	1B
Airphoto:	BCB 91039
Drafted:	Feb 1, 2008
By:	ECON

Legend

- Falling Corner
- Permanent Landing
- Temporary Landing
- Station
- Culvert
- Bridge
- RP
- Turnout
- Quarry
- Gate/Barrier
- Swamp
- Wildlife Tree
- Topped Tree
- GPS Reference Point
- Emergency Landing
- Watertank
- Parking
- Legal Monument
- Water Intake
- Beaver Dam
- FS Campground
- Picnic Area
- VQO
- Recreation Inventory
- Constrained for Recreation Mgmt
- Main Road
- Existing Road
- Engineered Road
- Projected Road
- Existing Trail
- Block Boundary
- Treatment Unit
- Hydro Line
- S1-S4 Fish Creek
- S5-S6 Creek
- NCD non-classified Drainage
- Not Classified Creek
- Steep Terrain
- Management Zone
- Reserve/WTP
- Wetland
- Lake
- Woodlot Boundary
- Comm Thin
- Patch Cut
- Pole Harvesting
- Future Block
- Old Cutblocks

Signature / Seal

Date

econ

Appendix 3: Woodlot Licence Plan Map – Cougar Cliff

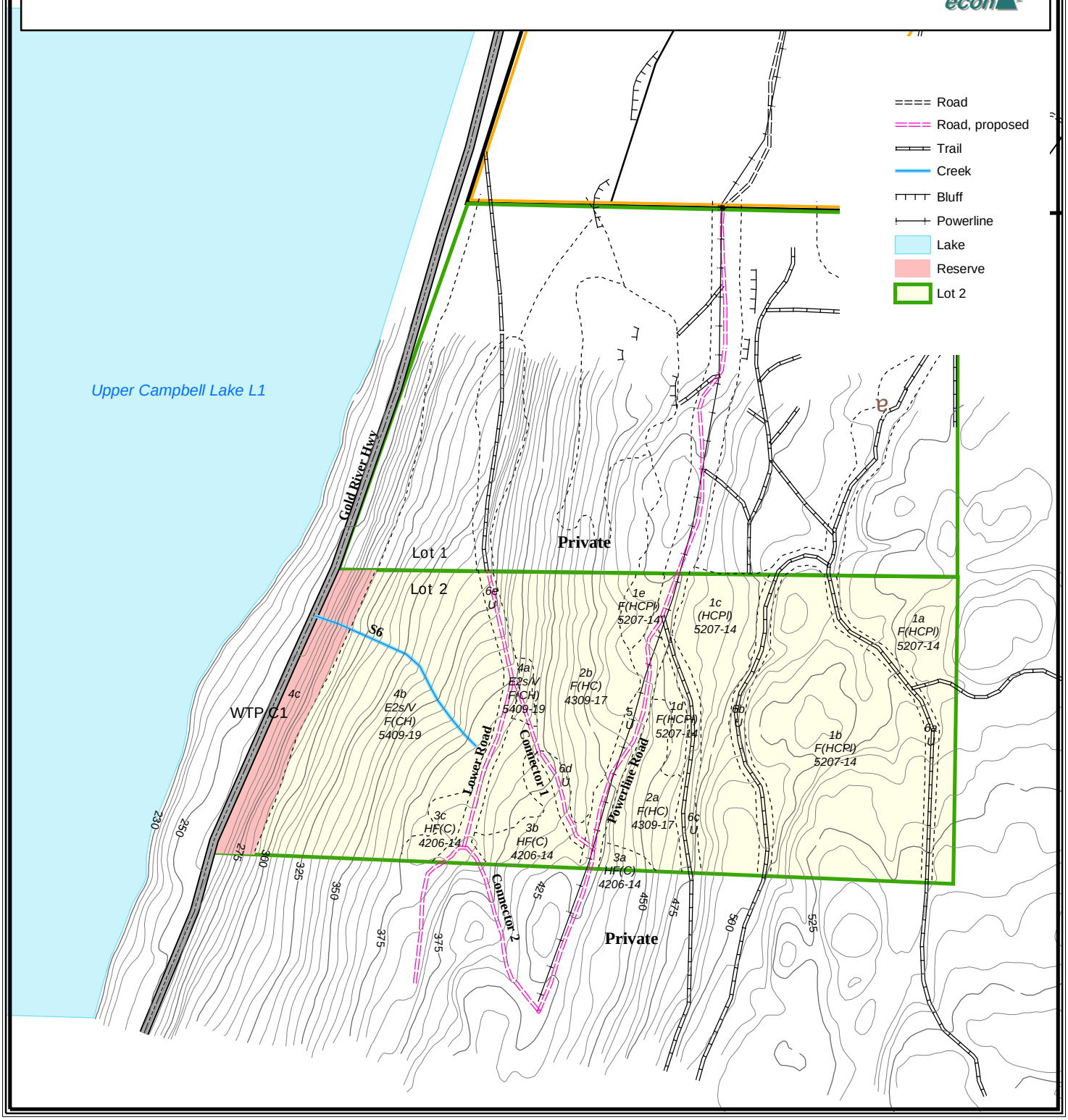
Woodlot Licence W1641

Private Portion
Cougar Cliff, Lot 2

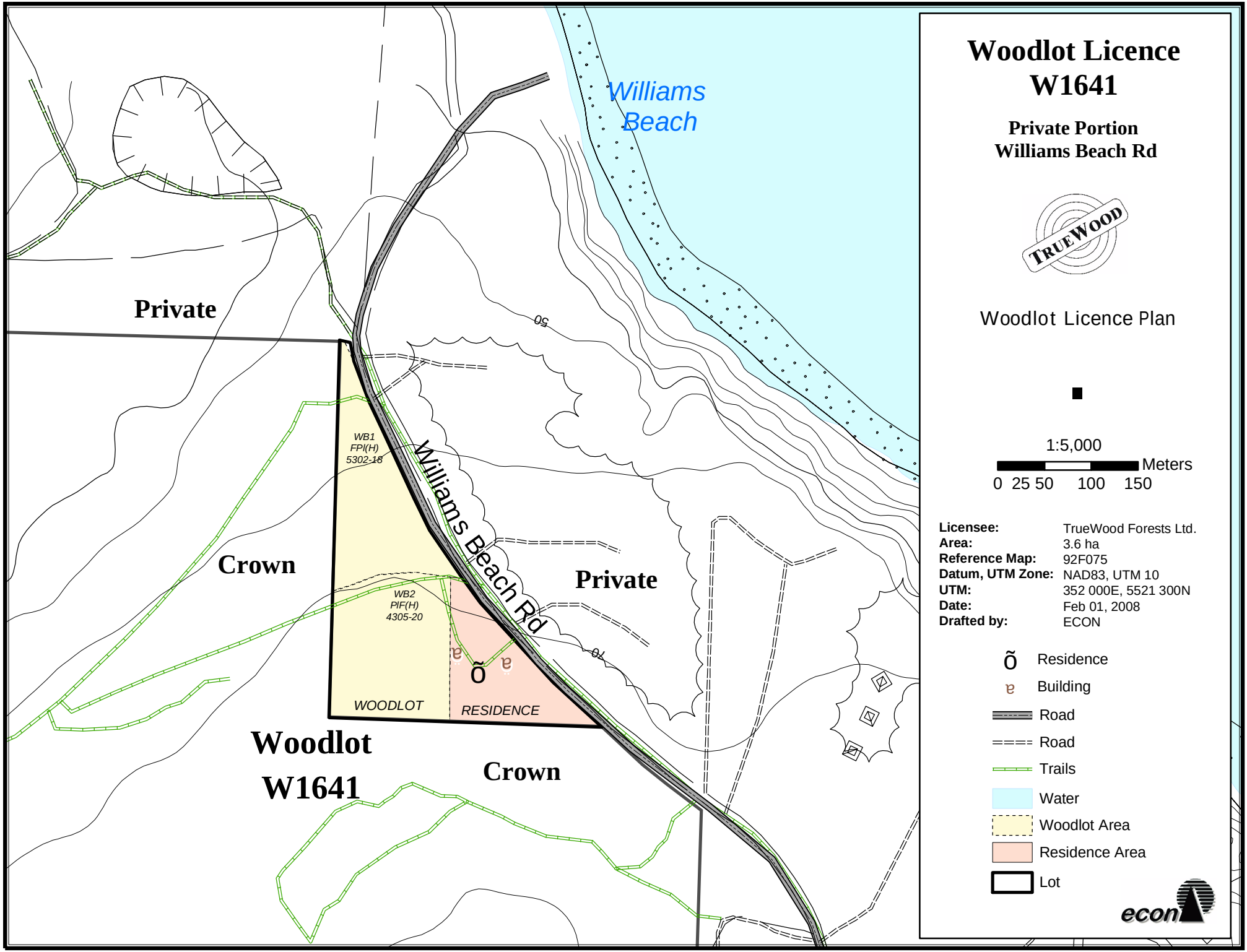
Licensee: TrueWood Forests Ltd
Area: 16.8 ha
Reference Map: 92F092
Datum, UTM Zone: NAD 83, 10
UTM: 310 000E, 5532 000N
Drafted: Feb 01, 2008
By: ECON

Woodlot Licence Plan

1:5,000



Appendix 4: Woodlot Licence Plan Map – Williams Beach


Williams Beach
Private
Crown
Private
Crown
Woodlot
W1641
WB1
FPI(H)
5302-18
WB2
PIF(H)
4305-20
Williams Beach Rd
WOODLOT
RESIDENCE
50
10
Woodlot Licence
W1641
Private Portion
Williams Beach Rd
TRUEWOOD
Woodlot Licence Plan
1:5,000
Meters
0 25 50 100 150
Licensee: TrueWood Forests Ltd.
Area: 3.6 ha
Reference Map: 92F075
Datum, UTM Zone: NAD83, UTM 10
UTM: 352 000E, 5521 300N
Date: Feb 01, 2008
Drafted by: ECON
Residence
Building
Road
Road
Trails
Water
Woodlot Area
Residence Area
Lot
econ

Appendix 5: WTP and Riparian Reserve Area Summary

ID	Area (ha)	Species Composition	Basal Area (m^2)	Crown Closure (%)	DBH / Height	Stem \ ha	Decay / Rot	Crevices	Large Brooms	Insect Infestation	Wildlife Use	Wolf Trees	Local Importance	Large & Stable	Snags / ha
WTP 1	0.28	$Hw_{60}Fd_{40}$	40	70	30/25	700	N	N	N	N	Y	N	N	Y	4
		Previously assessed WLT in patch. This tree is presently providing feeding and nesting habitat. Open understory provides both cover and wildlife corridor. Zonal site separating young (south) and older stand (north).													
WTP 2 & Creek 16	3.58	$Fd_{80}Hw_{15}Cw_5$	44	70	30/30	450	N	N	N	N	N	N	N	Y	1
		Isolated area due to creek and legal boundary. TimberWest opening to the east. Trees are large and stable and appear to be windfirm. Good SI with good WLT potential.													
WTP 7	1.94	$Fd_{95}Cw_3Hw_2$	44	60	30/25	450	N	Y	N	N	Y	Y	N	Y	3
		Dry stand with eastern aspect. Open stand with bluffs and areas of dense Fd regen. Some windfall due the shallow soils. Old growth Fd (WTC 8) with shedding bark providing suitable cervices.													
WTP 9	0.76	$Fd_{90}Cw_7Hw_3$	40	50	25/20	600	N	N	N	N	N	N	N	Y	2
		Dry stand with eastern aspect. Includes small bluffs and other small areas with mixed, moderately dense regen. Area will develop required structure and will provide suitable future habitat.													
WTP 10	0.94	$Fd_{90}Cw_7Hw_3$	36	50	25/20	450	N	N	N	N	Y	N	N	Y	2
		Dry site with open stand structure. Some rock opening. Area maintains wildlife corridor to the ridge that extends to the south. Some Shore pine on the driest sites. Noted Elk rubbing trees.													
WTP 11, Wet 8	5.23	$Hw_{60}Cw_{30}Fd_{10}$	32	80	30/25	300	N	N	N	N	Y	N	Y	Y	8
		The largest contiguous wetland area on W1641. Good structural diversity throughout the wetland complex. Numerous snags exist within the reserve and in the internal areas. Mixed shrubs and browse species present.													
Lake 1 & Wet 1	1.47	$Fd_{60}Hw_{30}Cw_{10}$	48	70	35/25	600	Y	N	N	N	Y	Y	N	Y	6
		Cavities noted in the numerous snags that are on the SW end of the lake. Excellent vertical structure. Large stable trees have high potential. Dense understorey of Hw. Perching sites overlook the lake and wetland.													

ID	Area (ha)	Species Composition	Basal Area (m^2)	Crown Closure (%)	DBH / Height	Stem \ ha	Decay / Rot	Crevices	Large Brooms	Insect Infestation	Wildlife Use	Wolf Trees	Local Importance	Large & Stable	Snags / ha
Mesa	1.69	$Fd_{60}Pl_{45}Cw_5$	28	40	25/20	450	Y	N	N	N	Y	Y	N	N	4
		Very dry site. Trees are small and dense with areas of open bluffs. One large WLT is providing excellent perching opportunities. Good site diversity with a treed swamp to the south. Cavity nests noted. Recreational feature.													
Old Growth	2.84	$Hw_{50}Cw_{30}Fd_{20}$	48	50	35/25	400	Y	N	N	N	Y	Y	N	Y	4
		Area contains Old growth stand of marginal timber quality during first pass. Patch has the old growth characteristics and provides the necessary habitat attributes. Good diversity and structure. Several snags in reserve.													
Creek 1 & 2, Lake 5, Wet 5	2.61	$Fd_{50}Cw_{30}Hw_{20}$	36	60	25/30	500	Y	N	N	N	Y	N	N	Y	4
		Three reserve units make up the larger wetland complex. The reserve is of varied structure with areas of short dense Hw and large Fd providing perching sites. The internal area has numerous Cw with dead tops. Cavities noted on treed island.													
Lake 3 & Wet 3	1.53	$Fd_{50}Cw_{30}Pl_{20}$	32	50	20/20	500	Y	N	N	N	Y	N	N	N	10
		Reserve and internal area with mixed species composition. Young (<20 yrs.) stand on east side of lake. Numerous snags of WTC 4 and several in which cavity nesting was noted. Stunted Pine and Labrador tea on poor wet site.													
Creek 4	2.12	$Fd_{90}Cw_{10}$	44	70	30/25	350	N	N	N	N	Y	N	N	Y	1
		Maturing stand of healthy Fd entire length of reserve. Open understorey provides cover and corridor between wetlands. Developing structure with good potential.													
Lake 4 & Wet 4	0.67	$Fd_{70}Cw_{20}Hw_{10}$	36	70	30/25	400	N	N	N	N	Y	N	N	Y	2
		Open wetland area with healthy young stand of mixed composition. Good future potential as reserve matures. Entire reserve area intact. Fishing in area and water fowl habitat in Lake 4.													
Creek 3	1.46	$Fd_{70}Cw_{20}Hw_{10}$	44	80	25/20	600	N	N	N	N	Y	N	N	N	1
		Young dense stand with little understorey. Reserve provides corridor between wetlands and provides cover and road screen from the adjacent highway #28													

ID	Area (ha)	Species Composition	Basal Area (m^2)	Crown Closure (%)	DBH / Height	Stem \ ha	Decay / Rot	Crevices	Large Brooms	Insect Infestation	Wildlife Use	Wolf Trees	Local Importance	Large & Stable	Snags / ha
Creek 11 & 13	2.91	$Dr_{50}Fd_{40}Cw_{10}$	36	60	30/25	400	Y	N	N	N	Y	N	N	Y	4
		Rich site with healthy mixed stand of large trees. Site has high potential. Root rot patch has created three good standing snags.													
Creek 9	1.14	$Fd_{40}Cw_{30}Hw_{20}Dr_{10}$	32	60	25/20	450	N	N	N	N	Y	N	N	Y	2
		Shallow creek draw. Reserve on good site with high potential. Artificial snags planted on road L200 at decking sites adjacent to reserve. Cw understorey of moderate density.													
Wet 9	0.07	$Dr_{50}Fd_{10}$	20	50	20/15	250	N	N	N	N	N	N	N	Y	2
		NcBr area on legal boundary. Red alder snags (WTC 3) as feeding sites. Access to Campbell lake.													
Campbell Lake	2.16	$Fd_{70}Hw_{20}Cw_{10}$	53	70	38/32	494	N	N	N	N	Y	Y	Y	Y	0
		10 - 20m wide strip along Campbell Lake, Fd-dominated 2nd growth stand with history of high exposure. Plots @ 48.3-19 and 45.4-25.													
Total	33.40														
WTP C1	0.90	$Fd_{80}Hw_5Cw_5$	41	90	39/97	499	Y	N	N	N	Y	Y	N	Y	2+
		2 layered stand with scattered Fd residual 250 yrs+, frequent rock outcrops, steep slope above Gold River highway.													

APPENDIX 6: ALTERNATIVE STOCKING STANDARDS

Table: A

ADMINISTRATION			
Vancouver Forest Region	**Campbell River Forest District**	**Licensee: TrueWood Forests Ltd.**	**Woodlot Licence #W1641**	**February 1, 2008**

ID #	BEC		Preferred Species						Acceptable Species								Stocking (w/s)			Min Inter Tree Dist (m)	Regen Delay	FG Date	Tree Ht > Brush (min %)	Post Spacing Density		Comments:
	Zone & variant	Site Series	1	Ht (min)	2	Ht (min)	3	Ht (min)	1	Ht (min)	2	Ht (min)	3	Ht (min)	4	Ht (min)	Target P&A (sph)	Min P&A (sph)	Min P (sph)	MITD (m)	Max (yrs)	Late (yrs)		Min	Max	
A	CWHxm	01/04	Fd	3.0					Pw[5]	2.5	Hw[8]	2.0	Cw	1.5	Lw[9]	1.5	900	500	400	2.0	3	12	150	500	1500	Zonal site
B	CWHxm	02	Fd	2.0					Pl	1.25	Pw[5]	2.5					400	200	200	2.0	3	12	150	200	800	Avoid logging – xeric site, shallow soils
C	CWHxm	03	Fd	2.0					Cw	1.0	Pw[5]	2.5	Lw[9]	1.5	Pl[6]	1.25	800	400	400	2.0	3	12	150	400	1200	Dry site
D	CWHxm	05/07	Cw	2.0	Fd	4.0			Bg	3.5	Pw[5]	2.5					900	500	400	2.0	3	12	150	500	1500	Rich and moist site
E	CWHxm	06	Fd	3.0	Cw	1.5			Pw[5]	2.5	Hw	2.0					900	500	400	2.0	6	14	150	500	1500	Wet site
F	CWHxm	08/09[1]	Cw	2.0	Bg	3.5			Ss[7]	3.5							900	500	400	1.5	3	12	150	500	1500	Floodplain - medium/high bench
G	CWHxm	10	Act	4.0	Dr[4]	4.0	Mb[4]	4.0									800	400	400	1.5	3	12	150	400	1200	Floodplain - low bench
H	CWHxm	11[1]	Cw	1.0					Pl[1]	1.25							400	200	200	1.5	3	12	150	200	800	Avoid logging – wet and very poor
I	CWHxm	12[1]	Cw	1.0					Hw[4]	1.5	Pw[5]	2.5	Ss[7]	1.5			800	400	400	1.5	3	12	150	400	1200	Organic soils - avoid ground based equipment
J	CWHxm	13/14[2]	Bg	3.5	Cw	2.0	Fd[1]	4.0	Ss[7]	3.5							900	500	400	1.5	3	12	150	500	1500	Fluctuating water table
K	CWHxm	15[2]	Cw	2.0					Ss[7]	3.5							800	400	400	1.5	3	12	150	400	1200	Fluctuating water table
L	CWHxm	01/06	Dr[4]	3.0	Mb	3.0											1200	1000	800	1.5	3	12	150	800	1500	High density deciduous management
M	CWHxm	05/07/08/ 09[1]/13/14[2]/ 15[2]	Act	4.0	Dr[4]	4.0	Mb	4.0									1200	1000	800	1.5	3	12	150	800	1500	High density deciduous management
O	CWHxm	01/04/06	Cw	1.5	Pw[5]	2.5			Fd[3]	3.0	Hw[3, 8]	2.0	Lw[9]	1.5			900	500	400	2.0	3	12	150	500	1500	Alternate species root rot treatment
P	CWHxm	02	Pw[5]	2.5					Pl[6]	1.25	Fd[3]	2.0					400	200	200	2.0	3	12	150	200	800	Avoid logging – xeric site, shallow soils
Q	CWHxm	03	Cw	1.0	Pw[5]	2.5			Fd[3]	2.0	Pl[6]	1.25	Lw[9]	1.5			800	400	400	2.0	3	12	150	400	1200	Alternate species root rot treatment
R	CWHxm	05/07	Cw	2.0	Pw[5]	2.5			Fd[3]	4.0	Bg[3]	3.5					900	500	400	2.0	3	12	150	500	1500	Alternate species root rot treatment
S	CWHxm	08/09	Cw	2.0					Bg[3]	3.5	Ss[3, 7]	3.5					900	500	400	1.5	3	12	150	500	1500	Alternate species root rot treatment
T	CWHxm	12	Cw	1.0	Pw[5]	2.5			Hw[3]	1.5	Ss[3, 7]	1.5					800	400	400	1.5	3	12	150	400	1200	Alternate species root rot treatment
U	CWHxm	13/14[2]	Cw	2.0					Bg[3]	3.5	Fd[3]	4.0	Ss[3, 7]	3.5			900	500	400	1.5	3	12	150	500	1500	Alternate species root rot treatment

Foot Notes

1 Elevated microsites are preferred.

2 These sites represent areas with strongly fluctuating water tables. They are often found as mosaics in combination with other sites. Elevated microsites are preferred and mechanical mounding is recommended.

3 Not acceptable within 10 m of Fd, Hw, Bg or Ss second growth stumps.

4 Avoid gleyed soils and in frost pockets.

5 Pw must be free of blister rust within 10 cm of the stem and be pruned as per ministry guidelines or be blister rust resistant stock (≥ 50% resistance). Pw may occupy 5% on all sites except sites 04 & 05 where 20% will be the upper limit of the Free-Growing composition. When used for root rot treatment no limit on percent composition is set.

6 Restricted to nutrient-very-poor sites.

7 Risk of weevil damage, use resistant stock where possible. Ss will not exceed 20% of the free growing stand or 5% of the free growing stand on site series 13, 14, & 15 on a dispersed basis. Clumps not to exceed 0.1ha in size.

8 Hw is not acceptable on site series 04. The proportion of the free-growing stand comprised of Hw will not exceed 20%.

9 Larch (Lw) will be used as an alternative species in W1641 in site series 03 and 04 only with approval from CRFD as more field data becomes available or as MOFR policy provides clearance.

Stocking Standards - General Comments

This table has been developed from the *Reference Guide for FDP Stocking Standards* dated December 11, 2002 and the standards established in the Woodlot Licence Forest Management Regulations (January 31, 2004) Division 2 of Part 6, Schedule A, Table A as well as the correlated guidelines and site interpretation for the Vancouver Forest Region (VFR). Where site series have similar stocking standards, they have been combined. Sections A-K are the general stocking standards. Sections L & M are the deciduous stocking standards. Sections O-V apply to sites affected by root rot.

'Biogeoclimatic unit' or 'BEC' means the zone, subzone, variant and site series described in the most recent field guide published by the Ministry of Forests for the identification and interpretation of ecosystems, as applicable to a harvested area.

Site series with the comment of 'avoid logging'; floodplain site series or sites with strongly fluctuating water tables have been included. However, management on these sites will be limited and will generally be included within a mosaic of better sites. In some cases where there are fluctuating water tables, mounding may be prescribed to create better microsites.

Where standards units (SUs) are comprised of an un-mappable mosaic of site series, the practice will be to manage for the stocking standards, noted by the ID#, of the dominant site series provided that the tree species are suitable (i.e. preferred and acceptable) in all site series contained within the SU.

A limited number of scattered deciduous trees will be tolerated on all conifer plantations, to provide a nurse crop, promote nutrient cycling or for general biodiversity objectives. Allow up to 50 spha as deciduous ghost trees during surveys on all sites so that these deciduous ghost trees have no impact on the free growing status of the crop trees. Where deciduous trees are within 10m of each other they are not to be regarded as ghost trees due to increased competitive density effects (The deciduous stems in question would impact the free growing status of sample trees).

The minimum inter-tree spacing is generally reduced to 1.5 m under the following site-specific conditions: frequent bedrock, large blocky colluvium, hygric sites, and disturbed roadside areas amongst slash accumulations (up to 10 m from the travelled portion of the road). On machine mounded sites the minimum inter-tree spacing is reduced to 1.0 m.

Deciduous Management

Recommended Regime: The product objective is to manage for high quality knot-free sawlogs on a 40 - 50 year rotation. Stand-establishment with high densities (1500 sph) is required to achieve a target of 1200 stems/ha at free growing. At approximately age 10, but not before stand height 12 to 16 m, space to 900 stems/ha. Dead branch prune the crop trees early and continue density regulation treatments approximately every 10 years to maintain good crown forms and eliminate low quality stems.

The establishment of a second crop conifer layer (Cw, Ss) before or after density treatment is optional. If a red cedar or Sitka spruce understory is planted in addition, then the natural pruning of the alder would be enhanced. The removal of the alder at harvest age is should be planned for while leaving a fully stocked, semi-mature conifer pole stand remaining.

Where conifers are established underneath a designated deciduous stand, the stand's regeneration and free to grow status will be measured using the deciduous standards only. Damage criteria for deciduous species have not been formally established. General free-growing criteria will be adopted, such that well spaced stems will be of good form, health and vigour.

Stocking Information – Specified Areas

For salvage of scattered windthrow or root rot mortality, openings of up to 0.1 ha in size are acceptable, not requiring pre-harvest mapping, associated regeneration and requirements to establish a Free Growing stand. No long-term impact on timber yield is expected as the subject areas are likely to regenerate naturally or will be planted concurrent with harvest in adjacent areas.

Table B: Stocking Information for Specified Areas

Target from Table A standards	Layer*	Stocking**		
		Target pa	MIN pa	MIN p
(stems/ha)		(well-spaced/ha)		
900 - 1200	1	400	200	200
	2	500	300	250
	3	700	400	300
	4	900	500	400
800	1	300	150	150
	2	400	200	200
	3	600	300	300
	4	800	400	400

*Stand Layer definition

Tree Layer 1	Mature	trees >= 12.5 cm dbh
Tree Layer 2	Pole	trees 7.5 cm to 12.4 cm dbh
Tree Layer 3	Sapling	trees >= 1.3 m height to 7.4 cm dbh
Tree Layer 4	Regeneration	trees < 1.3 m height

** pa - preferred and acceptable species p - preferred species

Preferred and acceptable species and 'Target from Table A Standards' are as specified in Table A by biogeoclimatic ecosystem classification (BEC) site series.

II. SUPPLEMENTAL INFORMATION REQUIRED TO BE SUBMITTED IN SUPPORT OF THE PROPOSED WOODLOT LICENCE PLAN

1. REVIEW AND COMMENT

ADVERTISING

A copy of the advertisement placed in the Campbell River Mirror on February 8th 2008 is included in this final submission.

REFERRALS

This plan had been referred to the following agencies and/or groups either directly or via the Ministry of Forests and Range (contact Aaron Smeeth ALO):

Hamatla Treaty Society 1441-A Island Highway Campbell River, B.C. V9W 2E3 Ph: 287-9460, Fax: 287-9469	**Cape Mudge First Nation** PO Box 220 Quathiaski Cove, BC V0P 1N0 Ph: 285-3316, Fax: 285-2400
Campbell River First Nation 1400 Weiwaikum Road Campbell River, BC V9W 5W8 Ph: 286-6949, Fax: 287-8838	**Comox First Nation** 3320 Comox Road Courtenay, BC V9N 3P8 Ph: 339-4545, Fax: 339-7053

Maps had been forwarded by MoFR to:

Guide-Outfitter certificate holder #100572 (Bryan Swift)

COPY OF WRITTEN COMMENTS RECEIVED

No comments from the public were received. The Comox First Nation provided a response letter, which is included in this final submission.

REVISIONS MADE AS A RESULT OF COMMENTS RECEIVED

The revisions added in this final submission are described in the cover letter.

2. CONSULTATION WITH FIRST NATIONS

Included within this final submission is a copy of the 'First Nations Information Sharing Checklist' a consultation checklist provided by the Campbell River Forest District. Included with the checklist are all letters, minutes and correspondence.

3. EXEMPTIONS

N/A

4. RATIONALE IN SUPPORT OF PROPOSED ALTERNATIVE PERFORMANCE REQUIREMENTS

STOCKING STANDARDS

Alternative stocking standards are proposed given the location and the licensee's full intent to facilitate intensive forest management and to improve site productivity and species/product diversity. Additionally, existing standards with respect to the use of broadleaf species lack measurable and enforceable standards for implementation and are therefore defined further within the alternative stocking standards. Full details and listing of the stocking standards are provided in Appendix 6.

All areas of harvest will undergo pre-harvest mapping as per Section 33 of the Woodlot Licence Planning and Practices Regulation. At that stage the fundamental decision will be made as to whether a conifer or a broadleaf standard will apply and the Standard Unit ID will be assigned.

Forest health concerns raise additional issues as to the appropriateness of the defaults in areas where root rot (e.g. *Phellinus weirii)* impacts the regeneration and long-term health and productivity of the preferred species. The proposed alternative stocking standards enable the production of healthy stands that protect adjacent resources and values. For example, on an infected zonal site (01) adjacent to an S4 creek or recreational trail stumping is not appropriate due to sedimentation concerns or to visual appearance. In these cases the establishment of Douglas-fir (preferred) may prove difficult and unsuited in the long-term due to re-infection.

The Chief Forester's stocking standards indicate black cottonwood (Act), red alder (Dr) and bigleaf maple (Mb) as being a productive, reliable and feasible regeneration option on several site series within the CWHxm. The attached Alternative Stocking Standards will be used and include the standards for both pure broadleaf stands and mixed woods regeneration. The use of broadleaf species is proposed in consideration of the Chief Foresters memorandum dated August 22nd, 2000 and the supporting note 'Common Principles for the Management of Red Alder within the Coast Forest Region' dated

August 2004. The management for broadleaf species is proposed on a limited scale and is consistent with the management assumptions adopted in the last Annual Allowable Cut (AAC) calculation.

The minimum density post-spacing shown corresponds to the values recommended in the Establishment to Free-growing Guidebook for the Vancouver Forest Region - i.e. the same as the minimum-stocking standard for conifer stands.

However, the maximum post-spacing density is set higher than the recommended 600spha above the target density due to the fact that the Echo Lake (Crown) and Cougar Creek (private) portions of the woodlot licence are located in a snow belt with frequent heavy snow and freezing rain loads. If the density of a juvenile stand would be reduced to drastically, then there would be a high risk of snow press and stem breakage. This will allow for two-stage spacing entries in order to manage the described risks and it also provides the opportunity to capture the small-diameter products.

Higher stocking is noted for the deciduous stands to ensure self-pruning and may include a conifer component. The minimum height criterion is based on the tallest conifer standard of the particular site series since the listed hardwoods are at least as rapidly growing as their coniferous counterparts. If a cedar or Sitka spruce understory is planted in addition to the full hardwood stocking, then the natural pruning of the alder would be enhanced. However, the stand's status will only be measured using the broadleaf standards. The removal of the alder at harvest age and the retention of a fully stocked, semi-mature conifer pole stand behind is operationally feasible.

Damage criteria for broadleaf species have not been established. No significant insect or disease outbreaks have been recorded for existing alder trials to date. General free-growing criteria will be adopted and damage assessed by the survey technician at the time of the survey. Well-spaced stems will be of good form, health and vigour. Species-specific damage criteria will be used upon development.

The stocking standards for specified areas are as per the default standards with the exception of deciduous stands with initial stocking densities greater than 900 stems per hectare (sph). For these stands the target and minimum stocking standards for tree layer 1 have been reduced from the default coniferous standards to reflect the difference in deciduous stand development and management regimes. Under a deciduous management regime initial densities will be higher than those for a coniferous stand and target thinning densities will be relatively lower. Higher initial densities are prescribed to promote self-pruning and stem development prior to thinning.

The broadleaf standards are also supported by the following research literature:

- Hibbs *et al.* The Biology and Management of Red Alder (1994),
- E.B. Petersons *et al.* FRDA Report 250 – Black Cottonwood and Balsam poplar manager's handbook for British Columbia (1996).
- L. Sigurdson *et al.* 2nd draft report on Weyerhaeuser's Red Alder Management Practices (1998),
- P.J. Courting *et al.* Forest Research Extension Note 016 - Red Alder management trials in the Vancouver Forest Region (2002).

SOIL DISTURBANCE LIMITS

Site preparation treatments would be conducted concurrent with or immediately following harvesting resulting in soil disturbance that may meet the assessment criteria for scalps and gouges. The increased limits are maximums only and are included to increase flexibility on these sites. These site conditions will normally constitute a small proportion of an applicable harvest area. Prescription and application of these treatments will consider critical site factors including soil sensitivity to erosion, displacement and compaction.

WIDTH OF STREAM RIPARIAN AREAS

Difficult terrain in Woodlot W1641 results in limited road location options and in several instances has necessitated the construction of roads within the riparian management zone (RMZ). In these instances there were no practicable road location alternatives that would not have led to a greater risk of road failure and sediment delivery to the adjacent water feature.

The alternative proposed reduces the width of the RMZ to the lesser of the distance between the foot of the fill slope or top of the cut slope of the road and the stream bank or wetland edge. This alternative is based on the conclusion that in situations where the RMZ is bisected by a road the portion of the RMZ that is no longer contiguous with the RMZ adjacent to the water feature is unable to contribute to the role of protecting streamside riparian structure and vegetation.

The Echo Creek FSR and L200 roads were constructed prior to the formation of the Woodlot. They are in good condition and to relocate them would result in additional soil disturbance, loss of productive area and further risk of sediment delivery to adjacent water features.

Given the road locations, further efforts will be made to protect water quality and quantity of neighbouring water features by limiting brushing and clearing on the creek side of the road beyond the minimum required for user safety.

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