



ANCILLARY INFORMATION – Site Plan (original)

North Island Replacement Forest Stewardship Plan

A. TENURE IDENTIFICATION

LICENCE NO: FLA94732	CP: 201	BLOCK NO: CHM259	LICENSEE NAME: Interfor Corporation
TOTAL AREA UNDER PLAN (ha): 7.7	MAPSHEET: 92L024		LOCATION: Chamiss
GROSS HARVEST AREA (ha): 7.2	REGION: West Coast Region DISTRICT: Campbell River District		LOCATION COORDINATES: Latitude: 50° 11' 47" Longitude: 127° 22' 4"

B. AREA SUMMARY

SU	TOTAL AREA UNDER PLAN (TAUP)	AREA (ha)		NP NAT (slide)	RESERVES	WTR	NET AREA TO BE REFORESTED (NAR)
		PERMANENT ACCESS					
		ROADS	OTHER				
1	7.2	0.6	---	---	---	---	6.6
Retention	0.5	---	---	---	---	0.5	---
TOTAL	7.7	0.6	0.0	0.0	---	0.5	6.6

C. ECOLOGICAL INFORMATION AND AREA DESCRIPTION

C.1 ECOLOGY						
SU	ELEVATION (m)		BIOGEOCLIMATIC CLASSIFICATION			
	RANGE	AVG.	ZONE	SUBZONE / VARIANT	SITE SERIES	GRID LOCATION
1	410-640	500	CWH	Vm2	06 (80%) / 09 (20%)	5-6 /C
C.2 AREA DESCRIPTION						
1	<p>SU1 is located along the CWH vm1/vm2 transition, it is predominantly vm2 due to the wetter and more nutrient poor characteristics of the site. It is mostly 06 site series with 09 influences along streams and wet draws. The terrain consists of long slopes (averaging 70%) broken up by small benches. The overstory is dominated by old-growth Yc, Hw, Cw and Ba with minor amounts of Hm. Advanced regeneration is moderate and composed of Yc, Cw and Hw. The aspect is predominantly southeast.</p> <p>Vegetation: The shrub layer is well developed with salal, vaccinium spp. and scattered salmonberry. The herb layer is heavy deer fern with various amounts of fern leaved goldthread, 5 leaf bramble and bunchberry. The moss layer consists predominately of step, lanky and sphagnum mosses.</p> <p>Soil: Soils are moderately well drained overall, consisting of SiL textures and angular coarse fragment contents of 30-60%. Soil depth is variable 60-80 cm+. The humus form is a mor.</p>					
C.3 PREVIOUS STAND CHARACTERISTICS						
STAND TYPE	SPECIES	AGE CLASS	HEIGHT CLASS	STOCKING CLASS	Site Index / Source (Source: SIBEC / Code: O)	
MAT	CwYcHw	9	4	1	20-24 (22)	

D. LAND USE OBJECTIVES – FSP S. 1.6.1

D.1 LANDSCAPE UNIT PLANS
Landscape Unit Objectives have not been set for the Kashutl LU.

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D.2 NON-SPATIAL OLD GROWTH OBJECTIVES

The old-growth retention target for the Kashutl LU (Low BEO) within the CWH vm1/vm2 is 13% (Regional Landscape Unit Planning (RLUP) Database v3.2, August 15, 2005). Draft OGMA's that meet the intent of the NSOG Order have been delineated but are not established / final. This block is not located within the vicinity of any of these OGMA's. Road Construction and harvesting activities within this block are in compliance with the Order and consistent with FSP S. 1.6.1.2.

D.3 VANCOUVER ISLAND LAND USE PLAN

The Vancouver Island Land Use Plan (VILUP) higher-level plan applies to the North Island FSP area. Block CHM259 is located within the Kashutl General Resource Management Zone (RMZ 14) in which HLP objectives 15 and 16 apply. The block is consistent with objectives 15 and 16, regarding retention of old-growth forests to meet old seral targets D.2 and Marbled Murrelet habitat requirements F.1.

E. SOILS – FSP S. 1.6.2.1

E.1 SOIL HAZARD RATINGS

HAZARD RATINGS – if logging methods other than cable or aerial are proposed
(a high or very high rating in any category is considered a sensitive soil)

SU	SOIL COMPACTION	SOIL DISPLACEMENT	SURFACE EROSION
1	H	H-VH	H-VH

NOTE: Proposed harvest method is via cable yarding. The hazard ratings have been provided in order to determine soil sensitivity only.

E.2 SOIL DISTURBANCE LIMITS

SU	MAXIMUM ALLOWABLE SOIL DISTURBANCE WITHIN THE NET AREA TO BE REFORESTED (%)
1	5

E.3 PERMANENT ACCESS STRUCTURE LIMITS

The estimated Permanent Access Structure (PAS) associated with block CHM259 is 0.6 ha or 7.8% of the TAUP (7.7 ha). As per FPPR section 36(1)a(i) PAS can be greater than 7% if there is no other practicable option, in regards to, the size, topography and engineering constraints of the cutblock. Block CHM259 is constrained in size due to terrain stability and requires more road due to the steep gullied terrain.

E.4 MANAGEMENT STRATEGIES FOR TEMPORARY ACCESS STRUCTURES

No temporary access structures are planned for use within this block.

E.5 REHABILITATION FOR TEMPORARY ACCESS STRUCTURES

MAXIMUM ALLOWABLE TIME TO COMPLETE REHABILITATION (MEASURED FROM COMPLETION OF HARVEST): N/A

E.6 TERRAIN STABILITY

A Terrain Stability Assessment (TSA) was conducted by Aztec Geoscience (report dated January 2016). The cutblock has a low to moderate likelihood of landslide initiation. Reduced rainfall shutdown guidelines will apply to the entire block.

Stream 1 has a high transport potential and stream 1a has a moderate transport potential; fall and yard away where safe and practicable to do so and/or clean gullies/draws concurrent with harvesting.

There is a moderate partial risk for sediment delivery to downstream fish (1.4km) from windthrow induced landslide in terrain adjacent to the boundary from FC C6 to FC C8. Windfirming is recommended.

Specific road construction related recommendations were also indicated. Refer to the TSA report for additional details.

E.7 WINDTHROW

A low incidence of windfall was noted during the fieldwork of CHM259, where windfall occurred it was primarily as a result of the dominant endemic southwest winds that funnel up from Malscope Inlet.

A windthrow assessment was completed for the block April 6, 2018, in which the dominant SW winds were used. It resulted in a low risk of windthrow along the leeward block edge and a moderate risk for the parallel and windward block edges. Based on the TSA above there is a moderate partial risk for sediment delivery to downstream fish (1.4km) from windthrow induced landslide in terrain adjacent to the boundary from FC C6 to FC C8. A 20 m Special Management Zone will be established along the boundary in which the dominants and co-dominants will be heli- pruned or topped to increase the windfirmness of these edges.

Any further windthrow will be managed as coarse woody debris.

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F. WILDLIFE – FSP S. 1.6.2.2

F.1 WILDLIFE
There are no established wildlife habitat areas (WHA) or ungulate winter ranges (UWR) within the vicinity of this block.
Marbled Murrelet (<i>Brachyramphus marmoratus</i>) – Marbled Murrelet (MAMU) are known to exist in the FSP area. This block does not contain any suitable type 1, 2 or 3 MAMU habitat as per the heli-survey completed in the area. According to the North Island MAMU Habitat calculations completed June 2016 the defined amount required by the Notice has been met in the Kashutl Landscape Unit.
Great Blue Heron (<i>Ardea Herodias fannini</i>) - There is potential for Great Blue Heron foraging locations within 10 km of the proposed harvest area (ocean, lakes); however, no occupied habitat was found within or adjacent to the cutblock.
Red-legged Frog (<i>Rana aurora</i>) - No occupied habitat was identified within the cutblock. There are no significant wetlands or fresh water lakes in close proximity to the cutblock. For terrestrial habitat, red legged frogs use a variety of seral stage forests (young, mid, old seral) which are abundant in the landscape unit.
Keen's Long-eared Myotis (<i>Myotis keenii</i>) - No bats or hibernacula were located within or immediately adjacent to the cutblock during the ordinary course of carrying out forest practices and planning operations.

G. WATER, FISH, WILDLIFE AND BIODIVERSITY WITHIN RIPARIAN AREAS – FSP S. 16.2.3

G.1 FISH				
The objective of this plan is to maintain stream bank integrity and protect water quality through the management of the Riparian Management Area (RMA). No topping, limbing or bucking within any streams to minimize sedimentation. Refer to section G.2 for riparian management strategies. Streams within these blocks have been classified in accordance with FPPR S. 47. A fish break was classified 1.4 km from the block, as an S2 reach, by D.R.Clough Consulting June 15th, 2017.				
G.2 RIPARIAN MANAGEMENT STRATEGIES				
RIPARIAN RESERVE ZONE (RRZ)				
No streams within or adjacent to the cutblock have riparian reserve zones.				
RIPARIAN MANAGEMENT ZONE (RMZ)				
STREAM / LAKE I.D.	STREAM / LAKE CLASS	HARVESTING Y/N	GULLY Y/N	MANAGEMENT STRATEGIES FOR STREAM OR LAKESHORE MANAGEMENT AREAS INCLUDING: PROTECTING STREAM BANKS (if there is no RRZ), MAINTAINING SHADE, AND DEBRIS MANAGEMENT. IF FELLING AND/OR YARDING ACROSS STREAMS, INCLUDE EITHER THE RESIDUAL BASAL AREA OR DENSITY FOR RMZ(S) AND LMZ(S).
1-R1	S5	Y	Y	This stream is classified as an S5 stream and has a 30m RMZ. The RMZ of this stream will be harvested to maintain operational feasibility and safety requirements. Basal area retention within the RMZs is not required. Fall and yard away. No topping, limbing or bucking within the streams, to minimize debris inputs. Clean stream of any introduced debris concurrent with harvest.
1a	S6	Y	Y	This stream is classified as an S6 stream and has a 20m RMZ. The RMZ of this stream will be harvested to maintain operational feasibility and safety requirements. Basal area retention within the RMZ is not required. Fall and yard away. No topping, limbing or bucking within the streams, to minimize debris inputs. Clean stream of any introduced debris concurrent with harvest.
1-R2, 1b, 2, 2a, 3	S6	Y	N	These streams are classified as S6 streams and have 20m RMZs. The RMZs of these streams will be harvested to maintain operational feasibility and safety requirements. Basal area retention within the RMZs is not required. Cross-stream falling and yarding will occur. No topping, limbing or bucking within the streams, to minimize debris inputs.
All	Embedded CWD will be left in place to maintain stream bank integrity. Stream cleaning is not deemed necessary as these streams have low to moderate transport potential. However, removal of deposited debris/slash will be done if the final Phase Inspection Report (PIR) deems it necessary.			
FPPR Sec. 52(2)	There are no direct tributaries to S1, S2, or S3 Streams or the ocean associated with this block.			
FPPR Sec. 50(1)	A RMA rationale is not required as FPPR Sec50(1)(c) applies. All of the road construction within RMA's is part of stream crossings.			

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H. COMMUNITY WATERSHEDS – FSP S. 16.2.4

H.1 COMMUNITY WATERSHEDS
This block is not located within a designated Community Watershed. No community or domestic water supplies are located near this block.

I. WILDLIFE AND BIODIVERSITY – FSP S. 16.2.5

I.1 BIODIVERSITY
I.1a LANDSCAPE-LEVEL BIODIVERSITY
The NHA of the block is 7.2 ha. It is located adjacent to CHM256 and CHM 255. CHM256 is FTG and greater than 10% of the highest trees are 3 m or taller. CHM255 is not FTG, it is 9.6 ha and located adjacent to proposed CHM261, which is 22.9 ha. The total opening size when CHM259 is combined with CHM255 and CHM261 is 39.7 ha. The block is consistent with FPPR S. 64 and 65.
I.1b STAND-LEVEL BIODIVERSITY
The cutblock is located within the Kashutl Landscape Unit (LU) – Low Biodiversity Emphasis Option (BEO). The wildlife tree retention (WTR) requirement within the Kashutl LU – CWH vm2 is 7% (minimum) of the gross harvest area. A 0.5 ha WTR has been established adjacent to the block meeting the above requirement.

J. CULTURAL HERITAGE RESOURCES – FSP S. 1.6.2.6

J.1 CULTURAL HERITAGE
This block is located in the consultative boundaries of the Ka:'yu:'k't'h' / Chek'tles7et'h' First Nations (KCFN) and the Maa-nulth First Nation.
J.2 MANAGEMENT STRATEGIES FOR CULTURAL HERITAGE RESOURCES / ARCHAEOLOGICAL SITES
Information sharing was carried out with the KCFN between May 20, 2010 and November 21, 2017. No specific concerns were identified. Information sharing was carried out with the Maa-nulth between August 12, 2013 and November 21, 2017. The block is located within the Nation's Important Harvest Areas (IHA) and evaluated as such. No concerns were raised. In the fall of 2016, an Archaeological Field Review (AFR) of the block was completed which proved negative for archaeological resources. No further archaeological work was recommended and the potential for archaeological resources in the vicinity of the setting was determined to be low. If any previously unidentified cultural heritage resources are <i>discovered</i> during harvesting, stop work and notify supervisor and/or Interfor personnel.

K. VISUAL QUALITY OBJECTIVES – FSP S. 1.6.4.1

K.1 VISUAL RESOURCE MANAGEMENT
The cutblock is not located within a "Known Scenic Area".

L. INVASIVE PLANTS – FSP S. 1.8

L.1 INVASIVE PLANTS
No invasive plants were noted within or adjacent to the plan area. The risk of establishment and/or spread of invasive plant species are deemed to be low in the cutblock. Site disturbance greater than 0.1 ha contiguous area will be assessed post harvest for treatment. Prompt reforestation should suppress shade intolerant invasive plants.

M. MANAGEMENT STRATEGIES

M.1 FOREST HEALTH MANAGEMENT STRATEGIES
Interfor has recorded and evaluated the occurrence of detected forest health factors currently causing damage or which may cause damage in the area under the site plan. Incidence of Hemlock Dwarf Mistletoe (DMH) was low to moderate within the block. <i>The 3 m knockdown rule will apply to this block.</i> The primary focus for reforestation in this block will be non-host species (BaYcCw).
M.2 COARSE WOODY DEBRIS MANAGEMENT STRATEGIES
CWD will be retained for soil conservation, retention of nutrient capital and wildlife habitat considerations. The residue from harvesting (including tops, limbs, low-grade logs and non-merchantable material) will make up the majority of CWD retained over the rotation.

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N. SILVICULTURAL SYSTEMS

SU	SILVICULTURAL SYSTEM & METHOD	Basal Area % Retention	Maximum stems per hectare retained	Minimum stems per hectare retained	Variable Retention Type
1	Clearcut with Reserves	N/A	---	---	---
SU	COMMENTS				
1	STAND STRUCTURE AND SITE CONDITION:	The cutblock is located upstream of the Ououkinsh River. The pre-harvest stand is old-growth and contains Hw(26%), Cw(18%), Ba(19%), Yc(30%) and Fd(7%) (based on cruise volume).			
1	LEAVE TREE SPECIES AND FUNCTION:	Block CHM259 will be harvested using a retention silviculture system. A 0.5 ha WTR has been left adjacent to the block. The WTR will function to provide structural diversity, old growth stand attributes in the regenerating stand, a source of CWD, and future wildlife trees in order to meet biodiversity objectives.			

O. STOCKING STANDARDS – FSP S. 1.7

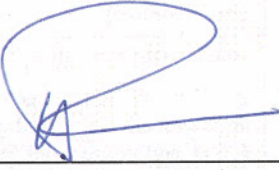
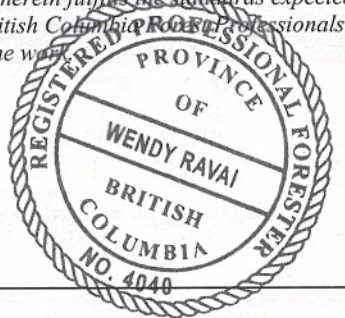
O.1 STOCKING STANDARDS									
SU	NAR (ha)	MOF ID#	SPECIES (*)		WELL SPACED TREES/HA		MINIMUM INTERTREE SPACING (m)	REGEN DELAY (years)	LATE FREE GROWING (years)
			ECOLOGICALLY SUITABLE SPECIES (height-m)		TSS (sph)	MSS (sph)			
1	6.6	1052825	Hw / 2.5 Cw / 1.5 Ba / 1.8	Yc/1.5 Hm/1.0 Ss / 3.0	900	500	2.0	6	20
(*) FOOTNOTES - AS PER FSP STOCKING STANDARDS – TABLE 2 (STANDARDS FOR EVEN-AGED STANDS):									
1, 2	Ba / Ss – Restricted to nutrient medium sites. Ss - Risk of weevil damage.								

P. SILVICULTURE PLAN

P.1 SILVICULTURE PLAN								
<i>All seed and vegetative material used in accomplishing this plan will be used in accordance to the Chief Forester's Standards for Seed Use (November 2004) and Changes to Seed Transfer Limits (2009). New Climate Based Seed Transfer Guidelines (CBST) may also be applied after April 1, 2018.</i>								
SU 1		CWH vm2 SS06 leading						
Reforestation: PLANT								
SU 1: Prompt planting of 900 sph Ba (20%), Cw(30%) and Yc (50%) within one year of post-harvest is recommended in order to meet regeneration delay early. Plant Cw/Yc on raised microsites in wetter areas. Focus Yc at higher elevation. Focus Ba well drained ridges with deeper soils. Some Hw and Hm can be expected to regenerate naturally post-harvest and supplement the planted stock.								
No fertilization recommended at time of plant.								
Seedling protectors are not required (i.e. deer activity noted in pre-harvest stand was low).								
Vegetation Management Strategies:								
SU 1 has a low brush hazard (L). Competing vegetation will be monitored during scheduled surveys. If the survey indicates that competing vegetation will impede regeneration and/or free-growing obligations from being met a brushing treatment will be schedule.								
<i>Prompt stand establishment should help to mitigate the need for future brushing treatments.</i>								
P.2 SEEDLING REQUIREMENTS								
SU / Type	NAR (ha)	Species	Age Class	Stock Type	Seed Zone	Elevation (m)	Trees per ha	Total Trees
1 / PLT	6.6	Ba - 20%	1+0	410/412A	M	500	180	1,188
		Cw - 30%					270	1,782
		Yc – 50%					450	2,970

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ADMINISTRATION

ANCILLARY INFORMATION PREPARED BY (RPF SIGNATURE AND SEAL):	
<p>Wendy Ravai</p> <p>RPF Name (Printed)</p> <p>Date: May 6, 2018</p>	<p>Fieldwork and Document by: Wendy Ravai, RPF</p> <p><i>I certify that the work described herein fulfills the standards expected of a member of the Association of British Columbia Professional Foresters and that I did personally supervise the work.</i></p>  <p>RPF Signature and Seal</p> 

ANCILLIARY DOCUMENTS ON FILE:
☒ 1:5000 SITE PLAN MAP
☒ RMA ENCROACHMENT RATIONALE
☒ FIELD DATA CARDS (e.g., SP cards, forest health evaluations, site information, plantability, etc.)
☒ TERRAIN STABILITY ASSESSMENT
☒ ARCHAEOLOGICAL ASSESSMENT
☐ VISUAL IMPACT ASSESSMENT
☒ OGMA SUMMARY
☒ MAMU ASSESSMENT
☒ SOIL HAZARD ASSESSMENT
☒ RIPARIAN ASSESSMENT
☒ RIPARIAN SUMMARY (Engineers Stream Summary table)
☒ FOREST HEALTH / PEST INCIDENCE ASSESSMENT (during SP fieldwork)
☒ CRUISE SUMMARY
☒ WINDTHROW ASSESSMENT