SITE PLAN CP 408 BLOCK 5
COOPER CREEK CEDAR LTD.

A. TENURE IDENTIFICATION

LICENCE NO.:	CP:	BLOCK:	TIMBER MARK:	UTM:	LICENSEE NAME:
FL A30171	**408**	**5**	**FE5408**	**497886E , 5576707N**	**Cooper Creek Cedar (CCC)**
AREA UNDER TENURE (ha):	MAPSHEET/OPENING #:		ELEVATION:	LOCATION:	
27.8	**82K035**		**660 – 820m**	**Greyhorse**	

B. AREA SUMMARY

AREA OF NO PLANNED REFORESTATION (ha) (NPR)									
PERMANENT ACCESS	ROCK	WATER	SWAMP	OTHER NP	NC>4ha	WILDLIFE TREE RETENTION AREA (HA):	IMMATURE	OTHER (NP Brush)	TOTAL NPR AREA
1.6	-	-	-	-	-	**3.9**	-	**-**	**5.5**

NET AREA TO BE REFORESTED (ha)		
SU	SU AREA DESCRIPTION	NET AREA TO BE REFORESTED:
A	**ICH mw2 104^{8} 101^{2}** Aspect is mainly Northeast to North facing. Slope position is lower, with mainly short broken discontinuous slopes. Slopes range from 10 – 50%, with few short slopes >50%. Surface and subsoil soil texture is Silty Loam (SiL). Soils are moderately well drained. Coarse fragment content is low to moderate (10 - 40%) in surface and subsoil horizons. Moisture regime is predominantly submesic with few mesic areas, and nutrient regime is medium. Humus form is a thin mor (4.0 cm thickness on average). Rooting depth is 25 - 50cm. Average stand density (all species) is 770 stems/ha. Most stems fall within the 20 - 45cm DBH classes, with <5% of stems in the 50 - 90cm DBH classes. Approximate species densities are Hw 309 stems/ha, Cw 241 stems/ha, Fd 125 stems/ha, Lw 76 stems/ha, Ep 15 stems/ha, and Pw 4 stems/ha. The understory contains low to moderate densities of Cw Hw (Fd) regen, saplings and poles that are mostly suppressed and in poor condition. There are also 181 stems/ha of dead Pw Fd Lw Ep Hw (Cw), mainly in the 20 - 35cm DBH classes. **SU A has Non-Sensitive soils.** SU A will be logged via **ground based harvest** methods and a clearcut silviculture system.	**20.4**
B	**ICH mw2 103** Aspect is North facing. Slope position is crest, with mainly short uniform discontinuous slopes. Slopes range from 10 – 35%. Surface and subsoil soil texture is Silty Loam (SiL). Soils are well drained. Coarse fragment content is low to moderate (20 – 45%) in surface and subsoil horizons. Moisture regime is predominantly subxeric, and nutrient regime is medium. Humus form is a thin mor (4.5 cm thickness on average). Rooting depth is 36cm. Average stand density (all species) is similar to SU A, but with somewhat higher Fd and lesser Hw Cw components. **SU B has Non-Sensitive soils.** SU B will be logged via **ground based harvest** methods and a clearcut silviculture system.	**1.9**
	TOTAL NET AREA TO BE REFORESTED:	**22.3**
	TOTAL AREA UNDER THE PLAN:	**27.8**

SOIL DISTURBANCE

SU	Max. Allowable Soil Disturbance (%)	Max. Amount TAS May Exceed MASD Prior to Rehab (%)	Max. Allowable Soil Disturbance For Roadside Work Areas (%)	Maximum Permanent Access Structures (%)
A	10.0	5.0	25.0	5.7
B	10.0	5.0		

SU	CRITICAL SITE CONDITIONS THAT AFFECT THE TIMING OF OPERATIONS AND HOW THEY AFFECT THEM
A, B	• Avoid machine travel during periods of soil saturation to reduce soil compaction and soil displacement risk. Use designated harvesting trails during summer months, or a supporting snow pack in the winter. • Spot piling along roadsides, landings, and within the NAR may be necessary to remedy high levels of coarse woody debris.

RESULTS AND STRATEGIES

Biodiversity Objectives	
Result or Strategy Description	**3.5.3 - Old and Mature Forest**
Applies:	YES
How the Result or Strategy Applies to the Site (or Rationale if it does not apply)	'KBHLP Objective 2 – Old & Mature Forests' 'KBHLP Objective 5 – Connectivity' Field data collection found this block to be ICH mw2, and the block lies within Connectivity Corridor. For the ICH mw2, there is a Mature + Old forest requirement in this landscape unit (K17), and the Old forest target is met with OGMA area. Analysis completed by Timberland (Sept 6, 2018) shows that post-harvest there will be a surplus of Mature + Old within the Landscape Unit ICH mw2 as a whole, and also within connectivity corridor.
Result or Strategy Description	**3.5.3 - Green-up**
Applies:	YES
How the Result or Strategy Applies to the Site (or Rationale if it does not apply)	'KBHLP Objective 4 – Green-up' – The proposed cutblock is consistent with FPPR Section 65(2).
Result or Strategy Description	**3.5.1 - Objectives set by Government for Biodiversity – Landscape Level**
Applies:	YES
How the Result or Strategy Applies to the Site (or Rationale if it does not apply)	Biodiversity Emphasis. 'KBHLP Objective 4 – Green-up' The proposed cutblock and adjacent cutblocks comply with Sections 64 and 65 of the FPPR.
Cultural Heritage Resources	
Result or Strategy Description	**3.7 - Objectives set by Government for Cultural Heritage Resources**
Applies:	YES
How the Result or Strategy Applies to the Site (or Rationale if it does not apply)	A referral letter dated July 11, 2018, for CP 408 development was sent to the appropriate individual(s) and/or group(s). Cooper Creek Cedar Ltd did not receive any comments from First Nations identifying any concerns with the proposed development that had the potential of impacting cultural heritage values.
Recreation Resources	
Result or Strategy Description	**4.3 - Recreation**
Applies:	NO
How the Result or Strategy Applies to the Site (or Rationale if it does not apply)	The proposed cutblock is not located within a designated Recreational Area or Trail with legal objectives; therefore, managing for Recreation Resources is not applicable.
Riparian Management	
Result or Strategy Description	**3.4.1 - Objectives set by Government for Riparian Areas**
Applies:	YES
How the Result or Strategy Applies to the Site (or Rationale if it does not apply)	1) There is one **S6** stream located in the Northern side of the block. 2) See Section E.1 for Riparian Management Strategies. 3) See Section F for management strategies related to Temporary Access Structures and Soil Disturbance that should be used during and post-harvest in order to prevent/reduce soil disturbance and sediment delivery.
Soil Objectives	
Result or Strategy Description	**3.1 - Objectives set by Government for Soils [FPPR Section 5 and 12.1(1)]**
Applies:	YES
How the Result or Strategy Applies to the Site (or Rationale if it does not apply)	(FPPR Section 35 & 36) 1) **SU A** and **B** contain Non-Sensitive soils, and soil disturbance will not exceed **10%**. Specific measures for mitigating soil disturbance levels are addressed under Section F of this Site Plan. 2) Areas of the block where temporary access structures are required will be rehabilitated. 3) Specific rehabilitation measures are addressed under Section F of this Site Plan. 4) PAS will not exceed the recommended limit of **7.0%** and is estimated at **5.7%**. 5) Areas within the block assigned to roadside work areas will not exceed **25%**.
Visual Objectives	
Result or Strategy Description	**3.6 – Visual Quality**
Applies:	YES
How the Result or Strategy Applies to the Site (or Rationale if it does not apply)	A Visual Impact Assessment for **CP 408** was completed by Timberland Consultants Ltd in September, 2018. Portions of two cutblocks (**blocks 5** and **7**) fall within polygons with a VQO of Modification, and the remaining cutblocks fall within area that is Not Visually Sensitive. Analysis showed that **blocks 5** and **7** were only partially visible to non-visible from Highway 31 viewpoints; therefore the proposed development of **CP 408** meets the established VQO of Modification.
Water Management Objectives	
Result or Strategy Description	**3.4.4 - Consumptive Use Streams**
Applies:	NO
How the Result or Strategy Applies to the Site (or Rationale if it does not apply)	'KBHLP Objective 6' - **Block 5** is not located within a domestic watershed, therefore KBHLP objective 6 does not apply.

Wildlife Objectives	
Result or Strategy Description	**3.3.1 - Objectives set by Government for Wildlife - Species at Risk – Section 7 of the FPPR**
Applies:	NO
How the Result or Strategy Applies to the Site (or Rationale if it does not apply)	The block is not within a Wildlife Habitat Area. There were no sightings of Species at Risk during field development of this cutblock.
Result or Strategy Description	**3.5.2 - Objectives set by Government for Wildlife and Biodiversity – Stand Level**
Applies:	YES
How the Result or Strategy Applies to the Site (or Rationale if it does not apply)	(FPPR Section 66 & 67) There are three Wildlife Tree Retention Areas planned for this block, totalling **3.9 ha**. Overall wildlife tree retention percentage is approximately **14.0%**. The WTRA % meets the minimum % requirements stated in the FSP.
Result or Strategy Description	**3.3.2 – Ungulate Winter Range**
Applies:	YES
How the Result or Strategy Applies to the Site (or Rationale if it does not apply)	**Block 5** falls entirely within designated Ungulate Winter Range unit 350 – E – 75 (Elk, ICH mw2). Post-harvest the snow interception and early seral requirements will still be met within the UWR unit (38.2% snow interception and 12.3% early seral).

ADDITIONAL COMMENTS

Consistency Statement

This block is consistent with the **2018 – 2023 Forest Stewardship Plan – Cooper Creek Cedar Ltd. Forest Licence A30171**, approved January 26, 2018.

This Site Plan is prepared for **CP 408 block 5**, in accordance with FRPA Section 10(1), (2) & (3).

Community Watersheds

FSP Section **3.4.3**

Not applicable - the proposed block is not located within a Community Watershed.

Enhanced Resource Development Zones

FSP Section **3.2.1**

'KBHLP Objective 7 – Enhanced Resource Development Zones – Timber'

Block 5 is not within an Enhanced Resource Development Zone. The requirement to create a Result/Strategy for this objective does not apply.

Fire Maintained Ecosystems

FSP Section **3.5.3**

'KBHLP Objective 8 – Fire maintained Ecosystems'. There are no NDT 4 ecosystems in the FDUs under this FSP; therefore the fire-maintained ecosystem objective is not applicable.

Fisheries Sensitive Watersheds

FSP Section **3.4.2**

At the time the FSP was developed there were no designated "Fisheries Sensitive Watersheds" in FDUs in the FSP, therefore the requirement to create a Result/Strategy for this objective does not apply.

Invasive Plants

FSP Section **4.1** – Invasive Plants

The IAPP website was checked on October 2, 2018. The following invasive species were reported in nearby areas to **CP 408**; Common tansy, Canada Thistle, Chicory, Hawkweed species, Oxeye Daisy, Orange Hawkweed, Spotted Knapweed, St. John's wort, Yellow Hawkweed, and Burdock species.

Measures to prevent the introduction or spread of invasive plants noted in the FSP include:

- Cleaning equipment before moving from a work site with existing infestations to a new work site.
- Minimizing soil disturbance during primary forest activities (PFA).
- Reseed exposed mineral soil, resulting from a PFA in the first available fall or spring within 12 months following the soil disturbance. Plan planting of cutblocks as soon after harvesting as possible.
- During PFAs minimize soil disturbance by:
  - harvest on a snowpack, when feasible
  - random skid to designated skid trails to minimize skidder traffic on the ground
  - utilize benches for skid trails to minimize side cuts
  - utilize brush to construct skid trails to reduce contact with the ground
  - use overhead cable harvesting systems on steep ground
- Where grass seeding is undertaken, CCC will use certified grass seed (Canada common #1 or better grade) from reputable suppliers to ensure premium quality free of invasive plant seed, or a seed mix recommended by a MFLRNO range specialist.
- See FSP for additional strategies and practices regarding invasive plants.

Natural Range Barriers

FSP Section **4.2**

Not applicable. There are no range tenures located in the FDUs covered by this FSP.

Timber

FSP Section **3.2** - Timber

As per Sec 12(8) of the FPPR, results or strategies are not required for an objective set by government for timber.

Wildlife - Caribou

FSP Section **3.3** and **3.5.3**

'KBHLP Objective 3 – Caribou' was cancelled and replaced by *GAR Order #U-14-012 – Mountain Caribou – Southwest Kootenay Planning Unit*. This block does not fall within a Caribou Management Zone.

Wildlife – Grizzly Bear Habitat - Connectivity

FSP Section **3.3** and **3.5.3**

'KBHLP Objective 5 – Grizzly Bear Habitat & Connectivity Corridors'. Not applicable to the FDU which includes this block.

Block 5 falls within Connectivity Corridor area. Applicable targets for Old and Mature forest will be met following harvest.

STOCKING REQUIREMENTS

SU	NAR	Standards ID #	Other Performance Standards
A	20.4	1057474	See Section H - Stocking Requirements
B	1.9	1057470	See Section H - Stocking Requirements

C. MANAGEMENT OBJECTIVES & STRATEGIES

C.1 MANAGEMENT OBJECTIVES

- Objectives for **CP 408 Block 5** include meeting visual quality objectives, protecting streams, and retaining stand structure and forage values for wildlife.
- Harvest this mature stand of **Hw Fd Cw Lw (Pw Ep)** for saw logs, chips and value-added products and manage for healthy, free growing stands of planted and natural **Fd Lw Cw (Pw Pl Hw Py)** in **SUA**, and **Fd Lw (Pl Pw Py)** in **SU B,** for similar end products.
- **Wildlife Tree Retention Areas (WTRA's):** Three patches are planned for retention, totaling **3.9 ha** in size.
- **Kootenay Boundary Land Use Plan – Implementation Strategy (June 1997):** This block is located within **Resource Management Zone K-S08** (Lardeau, Cooper and Meadow Creeks – Special Resource Management Zone) and within the designated **Landscape Unit K17** (Goat Range) – High BEO Assignment.

C.2 CONDITIONS THAT MUST EXIST AFTER HARVEST OR TREATMENT TO ACCOMMODATE KNOWN FOREST RESOURCES

C.2a WILDLIFE

Stand Level attributes/ concerns identified:

Ungulate Winter Range: **Block 5** falls entirely within designated Ungulate Winter Range unit 350 – E – 75 (Elk, ICH mw2). Post-harvest the snow interception and early seral requirements will still be met (38.2% snow interception and 12.3% early seral).

Slope values are low to moderate in SU A and B, with few areas of short steeper slopes in SU A. Lower elevation ICH mw2 site conditions. Aspect is mainly Northeast to North facing, with short broken discontinuous slopes. Lower slope landscape location. Vegetation cover is very low to low over most of the unit. Existing coarse woody debris levels range from low to moderate (10 – 35cm diameter). An S6 stream crosses through the north side of the block, and an NCD channel in present in the south area. Old elk tracks were noted within the block boundary.

Stand type is: **Hw3Fd3Cw2Lw2(PwEp)**. Low densities of Lw Cw Fd vets are present.

Average stand density (all species) is 770 stems/ha. Most stems fall within the 20 - 45cm DBH classes, with <5% of stems in the 50 - 90cm DBH classes. Approximate species densities are Hw 309 stems/ha, Cw 241 stems/ha, Fd 125 stems/ha, Lw 76 stems/ha, Ep 15 stems/ha, and Pw 4 stems/ha. The understory contains low to moderate densities of Cw Hw (Fd) regen, saplings and poles that are mostly suppressed and in poor condition. There are also 181 stems/ha of dead Pw Fd Lw Ep Hw (Cw), mainly in the 20 - 35cm DBH classes.

Forest cover adjacent to the block includes a significant amount of immature stands in cutblocks harvested between 1977 and 2005. Mature forest cover is found around the north portion of the block, and adjacent to parts of the south and southeast boundaries.

Actions prescribed:

Total Area specified for the retention of wildlife trees: **3.9 ha** (14.0% of gross area)

Wildlife Tree Retention Areas (WTRA's):

WTRA-1 (1.0 ha) Cw5Hw3Fd1Sx1: This WTRA is located at the North end of the block, associated with small wetland area and gentle to flat slopes. Density is 200 – 400 sph; Height range is 15 – 35m; DBH range is 20 – 60cm; Age class is 5 – 7. Crown closure is 30%. Cw and Hw vets are present along with few Cw Hw snags, and Cw Hw understory. Larger diameter Cw Hw have sloughing bark, woodpecker excavations, and large branching pattern. Wildlife sign inside the patch included bear and ungulate scat, game trails, and woodpecker activity. Vegetation cover includes devil's club, horsetail, pipecleaner moss, and skunk cabbage.

WTRA-2 (2.8 ha) Fd5Lw3Cw1Hw1: This WTRA is located at the South end of the block. Density is 700 – 900 sph; Height range is 21 – 35m; DBH range is 20 – 50cm; Age class is 5 – 7. Crown closure is 40%. Fd Lw Cw Hw vets are present along with few Fd Lw snags. Steep slopes and moderate CWD levels are present. Wildlife sign inside the patch included bear and ungulate scat, and game trails. Vegetation cover includes falsebox and maple.

WTRA-3 (0.1 ha) Cw4Hw3Lw2Fd1(Ep): This WTRA is located at the Eastern boundary in the south area of the block, near FC2. Density is 700 - 900 sph; Height range is 15 - 30m; DBH range is 20 – 45cm; Age class is 5 – 7. Crown closure is 50%.

WTRA's will provide stand structure values for wildlife, perching and cover values, and visual values. Coarse woody debris values will also be created over time from dead and fallen stems.

Snags

Retain safe snags **<5m tall** in **SU A** and **B** where operationally feasible. Snags with evidence of wildlife use are preferred.

C.2c FISHERIES

There are no fish streams within or directly adjacent to the block. There is one **S6** stream that flows through the North end of the block in a Northeast direction, draining downslope towards Lardeau River (S1). **≥ 0 - 3%** of the basal area will be retained within the **20m RMZ** inside the harvest area, as only a short section of the stream (<50m) flows inside the block. The majority of the **20m RMZ** for the stream is outside the block and will not be harvested.

See Section E.1 for Riparian Management Strategies.

C.2d WATERSHEDS

See RESULTS AND STRATEGIES (3.4.4 - Consumptive Use Streams).

C.2e RECREATION

See RESULTS AND STRATEGIES (4.3 – Recreation).

C.2f BIOLOGICAL DIVERSITY

Landscape Unit - K17 (Goat Range): High BEO Assignment.

C.2g VISUAL RESOURCE MANAGEMENT

See RESULTS AND STRATEGIES (3.6 – Visual Quality).

C.2h CULTURAL HERITAGE

See RESULTS AND STRATEGIES (3.7 - Objectives set by Government for Cultural Heritage Resources).

See section E.5 for Archaeological information.

C.2i RANGE

Not applicable. There are no range tenures located in the FDUs covered by this FSP.

C.2j OTHER RESOURCES

Trapping / Guiding:

Trappers or guiding license holders in the area will be identified and notified through the Forest Stewardship Planning process.

Windthrow:

Block 5 is surrounded on most sides by immature stands where previous harvesting has occurred; Windthrow hazard will be **Very Low** for these areas. Mature stands around the north portion of the block, and adjacent to parts of the south and southeast boundaries, will have a **Moderate** hazard. Mature stands adjacent to the block are similar to more open, and in some cases have already been partially exposed to winds from previous harvesting, and road and natural openings. Adjacent stands also have a component of Lw and Fd, which have good rooting properties.

The block is medium in size, with a long narrow irregular shape, and has a lower slope location in the landscape.

Soils in SU A are moderately well drained. Rooting depth is 25 - 50cm.

Soils in SU B are well drained. Rooting depth is approximately 36cm.

CONDITIONS NOT APPLICABLE TO THIS SITE PLAN

THE FOLLOWING CONDITIONS WERE CONSIDERED, AND FOUND NOT TO BE APPLICABLE TO THIS SITE PLAN:
None identified.

D. ECOLOGICAL INFORMATION AND SITE CHARACTERISTICS

D.1 STANDARDS UNITS AND CRITICAL SITE CONDITIONS

	BIOGEOCLIMATIC					
SU	**TREATMENT UNIT**	**ZONE**	**SUBZONE**	**VARIANT & PHASE**	**SITE SERIES**	**SITE TYPE**
A	1	ICH	mw	2	104^{8} 101^{2}	-
B	1	ICH	mw	2	103	-

E. MANAGEMENT STRATEGIES

E.1 RIPARIAN MANAGEMENT STRATEGIES

RIPARIAN RESERVE ZONE (RRZ)

RIPARIAN/ LAKE ID	RIPARIAN/ LAKE CLASS	HARVESTING Y/N	SU XREF	DESCRIPTION OF THE PURPOSE AND EXTENT OF REMOVAL OR MODIFICATION OF TREES AND ANY RELATED FOREST PRACTICES IN RIPARIAN RESERVE ZONE(S)
-	-	-	-	-

RIPARIAN MANAGEMENT ZONE (RMZ)

RIPARIAN/ LAKE ID	HARVESTING Y/N	SU XREF	MANAGEMENT STRATEGIES FOR RIPARIAN 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).
S6-5-1	Y	A	**20m RMZ:** This stream is located in the North side of the block. **≥ 0 - 3%** of the basal area will be retained within the **20m RMZ** inside the harvest area, as only a short section of the stream (<50m) flows inside the block. The majority of the **20m RMZ** for the stream is outside the block and will not be harvested. Channel has been marked in the field with red ribbon. A section of Spur 2 falls within the RMZ because the road is required as part of a stream crossing. Road maintenance activities must not be carried out beyond the clearing width of the road, except as necessary to maintain the stream crossing. Gravel or other fill must not be removed from the RMZ in the process of constructing, maintaining or deactivating the road, unless the gravel or fill is within the road prism, at the stream crossing, or there is no other practicable option. (FPPR 50) (See additional management strategies below)

NON-CLASSIFIED (NC) RIPARIAN AREAS

RIPARIAN/ LAKE ID	SU XREF	MANAGEMENT STRATEGIES
NCD-5-1	A	**NCD-5-1** is located within the South end of the block. NCD channel has been marked in the field with red ribbon. (See management strategies below)

Riparian Assessment was completed by Timberland in **August 2018**.

1) **S6-5-1** stream – stream had low flow, average channel width of 2.1m, and average gradient of 12%. Stream originates from swampy terrain further upslope and flows in a northeast direction. Stream gradient steepens downslope as it drains towards Lardeau River.
2) Observe a **5m Machine Free Zone (MFZ)** on the **S6** stream and **NCD** channel, except at designated road and skid crossings. Reserve non-merchantable understory stems **<17.5cm DBH** and **shrubs** within the **5m MFZ**, where practicable.
3) **Fall and skid timber away from riparian features** (streams, NCD's, wetland) where practicable. Any debris entering a riparian feature as a result of harvesting will be removed upon completion of harvesting activities unless it does not obstruct water flow or its removal would cause further damage to the riparian feature. **Minimize crossings** on **watercourse channels** to the extent possible.
4) Where **watercourses** are crossed more than once, it is recommended to place a temporary skid bridge (e.g.: logs placed in draw) in order to prevent a potential diversion of flow.
5) All **machine trails** and **crossings** should be fully rehabilitated upon the completion of harvesting. Excess material that could cause redirection of natural drainage patterns should not be left at crossing locations.
6) **All surface drainage patterns** should be maintained and any that are disrupted as a result of harvesting operations should be restored immediately.
7) **A post-harvest inspection** should be completed to assess the amount of logging debris/excess soil within the wetted perimeter of all subtle drainage features. All natural drainage patterns should be maintained and left free of excess debris (slash or soil) that could result in a redirection of seasonal surface runoff/drainage diversion.
8) **Basal area retention** levels for the in-block RMZ's (within the NAR) are based on windthrow, windfirmness, wildlife habitat, water quality, and operational constraints.

E.2 FOREST HEALTH MANAGEMENT STRATEGIES

SU	Code	Nelson Region DRA Risk Factors	Points	Relative Risk	Comments
A, B	DRA	Site factors	**8**	H	• Armillaria is absent or present at low levels in this stand. • The Nomographic Zones in Section 3.0 of the "Armillaria Root Disease Management Guidelines for the Nelson Forest Region" (June 1998) indicate that Alternative or Intensive deferred treatments for root disease management are appropriate for this site, should Armillaria become a problem. • Alternative treatments will include planting (and/or managing for) a species mixture that includes species tolerant and /or moderately susceptible to Armillaria (e.g.: Lw, Cw, Hw, Pw, Pl, Py in SU A; and Lw, Pl, Pw, Py in SU B). Fd and Sx (highly susceptible) may be included in the planting mixture but should be limited to a combined maximum of **50%** of the mix. Microsite selection should reflect buffer zones around infected stumps, if they can be identified. • Hand-pulling (preferred) or pop-up spacing (alternative) should be considered in the future should Armillaria become a limiting factor in meeting regeneration or free growing requirements (see section H). • Stumping or pushover harvesting treatments are not suitable due to low sign of Armillaria, and high soil hazards.
		Host factors	**4**	M	
		Inoculum potential	**0**	L	
		Disease factors	**3-8**	L-M	
			15-20	**L-M**	

Other Forest Health Factors

SU	Code	%	Comments	Current risk to inventory
A, B	IWS	0	If Sx is planted in the post-harvest stand, monitor for white pine (spruce) weevil during silviculture surveys.	nil
A, B	DML	50	Lw forms 10% of the current stand density and 21% of the current stand volume. Many mature and vet Lw crowns noted with DML, however the severity of impact varied from light to heavy.	Low
A, B	IBD	<5	Very Low to Low incidence of Douglas-fir beetle, with possible few grey attack stems. Fd forms 17% of the current stand density and 25% of the current stand volume (DBH range 20-60cm, with most stems ≤45cm DBH). IBD noted in blowdown within block boundary.	Low - Moderate
A, B	DSB	0	Pw is present in very minor amounts in the current stand. A small amount of Pw may be planted in SU A and B. Plant only rust resistant stock. Expect high incidence of white pine blister rust on any naturally regenerated Pw.	nil

Expected future risks and actions

A FOREST HEALTH/PEST INCIDENCE ASSESSMENT IS NOT REQUIRED. Forest health information was collected during SP field data collection in **August 2018**.

Future risks include cold temperatures (cool aspect) and summer drought (low elevation).

SU A and **B:** Average species composition of the pre-harvest stand (stand density) is approximately **Hw 40% Cw 31% Fd 17% Lw 10% Ep 2% (Pw)**. Few Lw Cw Fd vets are present in the unit.

The age of mature trees in the stand, based on ages taken during cruising, is **81 – 162 years** (average 105 years).

E.3 VEGETATION MANAGEMENT STRATEGIES

LIVESTOCK TO BE USED FOR VEGETATION MANAGEMENT: YES: ☐ NO: ☒

Current Brush Hazard:

SU A: Very Low to **Low** levels of brush inside harvest boundaries, with few areas of **Moderate** cover.

SU B: Low to **Moderate** levels of brush inside harvest boundaries. Dry shrub brush complex.

Future Brush Hazard:

SU A: Future hazard is **Moderate** to **High** due to submesic moisture conditions, cool aspect, existing Ep in stand, and adjacent brush sources. Potential competitor species include maple, alder, Ep, At, Act, and bracken fern.

SU B: Future hazard is **Moderate** to **High** due to potential for a dry shrub brush complex. Potential competitor species include maple, alder, saskatoon, Ep, At, Act and bracken fern.

Species Complex:

SU A: Current vegetation includes falsebox, black huckleberry, birch-leaved spirea, prince's pine, queen's cut, rattlesnake plantain, bracken fern, and one-leaved foamflower.

SU B: Current vegetation includes soopolallie, falsebox, saskatoon, western yew, black huckleberry, prince's pine, and twinflower.

Brushing Methods: Should brushing become necessary, manual treatments are the preferred methods.

Anticipated Timing/Constraints: Treatment needs will be assessed through periodic walkthroughs and silviculture surveys. Treatment timing will be prescribed at the time of brush assessment.

Note: Where possible, avoid brushing **Vaccinium spp** in order to maintain huckleberry picking values, and to maintain forage on site for grizzly and black bears.

E.4 COARSE WOODY DEBRIS (CWD) MANAGEMENT STRATEGIES

CWD levels are **Low** (≤10% ground cover) in most areas, with dispersed areas of **Moderate** (15-20%) cover. CWD is predominantly composed of 10 - 35cm diameter stems of PwFdLwEpHw(Cw). Most stems are older, with decay and losing bark; some more recent bark covered stems also noted.

CWD levels are expected to be Low to Moderate post-harvest. Post-harvest CWD will consist of unmerchantable existing levels and snags, along with residue and breakage. A reduction of CWD levels is anticipated through clean harvesting practices and/or site preparation for planting, if required.

(FPPR Section 68): **Retain a minimum of 4 logs per hectare**, each being at least **2 metres** in length and at least **7.5cm** in diameter at one end.

See the SITE PREP section (K.1) for CWD management strategies.

E.5 ARCHAEOLOGICAL IMPACT ASSESSMENT

Archaeological Overview Mapping of the **CP 408** area shows that **block 5** does not fall within a polygon that has a potential rating.
An Archaeological Impact Assessment is not required.

F. SOIL CONSERVATION

F.1 SITE DISTURBANCE

	HAZARD RATINGS			SOIL CHARACTERISTICS		
SU	SOIL COMPACTION	SOIL DISPLACEMENT	SURFACE SOIL EROSION	DEPTH TO UNFAVOURABLE SUBSOIL (cm)		TYPE OF UNFAVOURABLE SUBSOIL
				MIN(cm)	MAX(cm)	
A	High	High	High	60	60	None to 60cm
B	High	Moderate	High	60	60	Dense parent material

F.2 SOIL DISTURBANCE LIMITS

SU A: ARE THERE SENSITIVE SOILS? ☐ YES ☒ NO

SU B: ARE THERE SENSITIVE SOILS? ☐ YES ☒ NO

MAX. PROPORTION OF TOTAL AREA UNDER THE PRESCRIPTION ALLOWED FOR PERMANENT ACCESS STRUCTURES (PAS): **5.7%**

Roadside harvesting or temporary landings will be used.

DEACTIVATION OF PERMANENT ACCESS STRUCTURES: Any permanent access structures (e.g.: roads, landings) will be deactivated – debris will be piled & burned, water control will be installed around all landings.

SU	MAXIMUM ALLOWABLE SOIL DISTURBANCE WITHIN THE NET AREA TO REFOREST (%)	MAXIMUM EXTENT SOIL DISTURBANCE LIMITS MAY BE TEMPORARILY EXCEEDED TO CONSTRUCT TEMPORARY ACCESS STRUCTURES OR EXCAVATED OR BLADED TRAILS (%)
A	**10%**	**5%**
B	**10%**	**5%**

MASD for Roadside Work Areas: 25%

Any temporary access structures (e.g.: road, landing, excavated or bladed trails) will be rehabilitated to the extent necessary to bring the SU net area back into compliance with the specified soil disturbance limits.

See **Section F.4** below for description of temporary access structures and/or excavated or bladed trails, if any.

Avoid harvesting during spring freshet/breakup conditions when soils are saturated, in order to reduce soil displacement and compaction.

Few areas of **steep slopes >35%** are present in portions of SU A, and are noted on the **Harvest Plan map**. In **SU A**, utilize benches for skid routes where possible.

F.3 REHABILITATION TIME FOR TEMPORARY ACCESS STRUCTURES

MAXIMUM ALLOWABLE TIME TO COMPLETE REHAB (MEASURED FROM COMPLETION OF HARVEST): **1 YEAR**

F.4 MANAGEMENT STRATEGIES FOR TEMPORARY ACCESS STRUCTURES

SU	GENERAL LOCATION:	MAX ALLOWABLE HEIGHT OF CUTBANKS (m)	AVERAGE HEIGHT OF CUTBANKS (m)	EQUIPMENT TO BE USED (IF OTHER THAN EXCAVATOR)
A, B	Blading or excavating is expected to occur in parts of the unit with moderate to steep slopes.	0.8	0.3	Skidder, cat.

Temporary Landings:
SU A: 6 landings @ 0.2 ha = 1.2 ha

- **SU A: Roadside harvest with landings. Favourable skidding with small areas of adverse skidding.**
- **SU B: Roadside harvest with landings. Favourable skidding.**
- **If broadcast burn treatment is anticipated, disperse non-merchantable woody debris and slash on site during harvest to enhance fuel levels.**
- **See Section E.1 for stream management strategies.**

The following will apply for any excavated/bladed trails that are required:

- Maximum trail width is 4m.
- Actual dimensions of bladed trails may vary depending on topography.
- The amount of bladed trail constructed will be kept to a minimum.

Short sections that become bladed trails where a non-bladed trail crosses a hump or ridge will be exempt from rehabilitation requirements provided that the soil disturbance limits in this SP are not exceeded.

Rehabilitation for bladed or excavated trails:
Any bladed or excavated trails will be rehabilitated as follows:

- De-compact the trail, including removing or redistributing woody debris that is concentrating subsurface moisture
- Return displaced surface soils, retrievable side-cast and berm materials on the excavated portion of the area
- Re-contour the slope
- Re-establish natural surface drainage
- IF soil erosion may cause sediment to enter a stream or wetland, place some woody debris over exposed mineral soils, and revegetate exposed mineral soils.

G. SILVICULTURAL SYSTEMS

SILVICULTURAL SYSTEMS

SU	SYSTEM / VARIANT / PHASE
A, B	Clear-cut silviculture system.
SU	**STAND STRUCTURE AND SITE CONDITION - COMMENTS**
A, B	Post-harvest stand structure will be even-aged with one age class. Planted trees and natural regeneration will include **Fd Lw Cw (Hw Pw Py Pl)** in SU A, and **Fd Lw (Pl Pw Cw Py)** in SU B. **Wildlife Tree Reserve Areas (WTRAs):** 3.9 ha **Leave trees** No mature leave trees are planned in SU A or B. **Snags** Retain safe snags **<5m tall** in **SU A** and **B** where operationally feasible. Snags with evidence of wildlife use are preferred.

H. STOCKING REQUIREMENTS (as per DSE South Columbia Default Stocking Standards Version 1.0, April 1, 2018)

H.1 ADMINISTRATION INFO and ASSESSMENT DATES

SU A & B Regime #	SU A – 1057474 SU B - 1057470	FREE GROWING ASSESSMENT PERIOD (years)	
Name:	SU A - ICH mw2 104 SU B - ICH mw2 103		
SU	REGENERATION DATE (YEARS)	EARLY	LATE
A	7	12	20
B	7	12	20

H.2 STOCKING REQUIREMENTS FOR SILVICULTURAL SYSTEMS OTHER THAN SINGLE TREE SELECTION

SU	PREFERRED SPECIES		ACCEPTABLE SPECIES		POST SPACING DENSITY (stems/ha)		MAX CONIFEROUS (stems/ha)
	SPECIES	MINIMUM HEIGHT (m)	SPECIES	MINIMUM HEIGHT (m)	MAX	MIN	
A	Cw[10,201] Fd[58] Lw Pw[31]	Lw Pw – 2.0 Fd – 1.4 Cw – 1.0	Pl Hw Py[9,14,203] Sx[10,13]	Pl – 2.0 Hw Py Sx – 1.0	1800	700	10,000
B	Fd Lw	Lw – 2.0 Fd – 1.4	Pl Pw[31] Cw[13] Py[9,14,203]	Pl Pw – 2.0 Cw Py – 1.0	1600	500	10,000

SU	WELL SPACED TREES/ha				MINIMUM PRUNING HEIGHT	RESIDUAL STAND STRUCTURE (other than single tree selection)		HEIGHT RELATIVE TO COMPETITION (% Tree over brush)
	TARGET pa	MIN pa	MIN p	MIN inter-tree DISTANCE	(*delete if not applicable*)	BA (m^2/ha)	DENSITY (SPH)	
A	1200	700	600	2.0 *	-	-	-	150%
B	1000	500	400	2.0 *	-	-	-	150%

Footnotes

9	Suitable on warm aspects.
10	Suitable on cool aspects.
13	Suitable at upper elevations.
14	Suitable at lower elevations.
31	Must use of blister rust resistant stock. See BC Journal of Ecosystems and Management 10(1):97-100 for supplementary information.
58	**South Area** – Fd limited to a max 50% of preferred and acceptable well-spaced stems due to root rot. See Root Rot Handbook (2017, in press).
201	Maximum 50% of preferred and acceptable well-spaced trees.
203	Recommended on sites for climate change adaptation.
*	MITD: For site series that do not already have reduced MSS, a reduced mitd of 1.7m may be used to facilitate planting superior microsites, when sites have: mechanical site preparation (mounding & disk trenching), been previously fill planted, or conditions where obstacle planting for snow creep is necessary. Reduced MITD applies to PLANTED TREES ONLY.

This block is located at lower to elevations of the ICH mw2 biogeoclimatic unit. Aspect is Northeast to North.

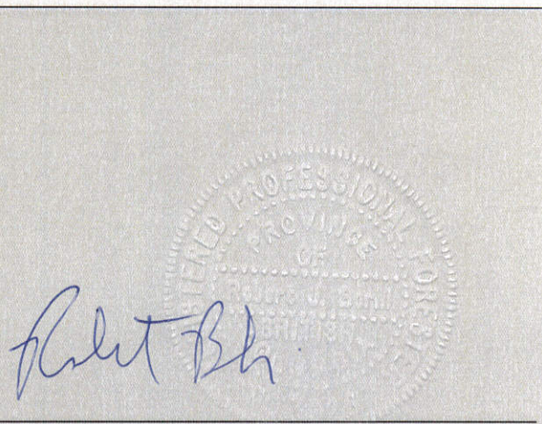
Py may be suitable for planting in the central west side of the block, which has a Southwest aspect (see SP map).

See Section K for planting stock recommendations.

I. ADMINISTRATION

SITE PLAN PREPARED BY (RPF SIGNATURE AND SEAL):

Robert Borhi
RPF Name (Printed)



RPF Signature and Seal

Date: 10/12/2018 RPF #: 3026

SITE PLAN ATTACHMENTS:

- ☑ SP MAP(S)
- ☐ ARCHAEOLOGICAL IMPACT ASSESSMENT
- ☐ TERRAIN STABILITY FIELD ASSESSMENT
- ☐ VISUAL IMPACT ASSESSMENT
- ☐ RIPARIAN ASSESSMENT
- ☐ FOREST HEALTH / PEST INCIDENCE ASSESSMENT
- ☑ SOIL CONSERVATION TABLE
- ☑ OTHER: REFORESTATION PRESCRIPTION
- ☑ OTHER: ARMILLARIA RISK ASSESSMENT MATRIX

MAJOR LICENSEE SIGNING AUTHORITY:

Licence Holder Signing Authority Signature

Licence Holder Signing Authority Name (Printed)

Date: _____

	Standards Units					
	A	**B**			**TOTAL HA**	**%**
HAZARD RATINGS:						
Compaction	High	High				
Soil Displacement	High (20)	Moderate (9)				
Surface Erosion	High (29 - 31)	High (27)				
Forest Floor Displacement	High (17)	High (17)				
Mass Wasting	High (29 - 39)	Low (20)				
Harvest System	Ground based	Ground based				
TOTAL AREA	25.9	1.9			27.8	
Wildlife Tree Patches / NP Nat						% WTP/IMM
WTRA	3.9	-			3.9	14.0
NP brush	-	-			-	-
Permanent Access Structures						% Disturbance
Proposed roads	0.9	-			0.9	3.2
Existing roads	0.7	-			0.7	2.5
Landings	0	-			0	0
Total disturbance permanent access structures	1.6	-			1.6	5.7
NET AREA TO BE REFORESTED	20.4	1.9			22.3	
Sensitive Soils (Y/N)	No	No				
Temporary Access Structures: Road, landing, excavated or bladed trails that will be rehabilitated (% of NAR).	5% (excavated/bladed trails, landings)	5% (excavated/bladed trails)				
Max. Allowable dispersed Soil Disturbance (% of NAR by Standards Unit) as a result of harvesting, mechanical site preparation, or hazard abatement activities.	10%	10%				

Comments:

Existing roads (permanent access):
SU A: Rd. Upgrade: 20m x 10m = **0.02 ha**
SU A: Section 7: 276m x 10m = **0.28 ha**
SU A: Section 8: 178m x 10m = **0.18 ha**
SU A: Section 30: 228m x 10m = **0.23 ha**

Proposed road (permanent access):
SU A: Spur 1: 348m x 10m = **0.35 ha**
SU A: Spur 2: 555m x 10m = **0.56 ha**

Proposed Landings (temporary):
SU A: 6 landings @ 0.2 ha = 1.2 ha

See **Section F** for Soil Conservation and Management of Temporary Access Structures.

K.1 SITE PREP

SU	PREFERRED	ALTERNATE
A, B	- Pile, or pile and burn, slash accumulations on roadsides and landings, or within the NAR. - Piling treatment during dry weather conditions or when soils not saturated. - Burn piles in the spring or fall. Up to 20% of piles may be left unburned to contribute to wildlife habitat and coarse woody debris values.	- No site prep, plant as is. - * Mechanical site preparation (e.g.: mounding, scarification) where necessary and feasible, combined with brush/slash piling, utilizing an excavator. - ** Broadcast burn or Spot burn if needed within the NAR to reduce excessive slash cover. Low to Moderate intensity burn, impact rank 2 to 3.

* SU A: Mechanical site preparation (such as mounding) could be considered, however there are no significant wet areas in this unit.

** Broadcast burn or Spot burn is a good option to reduce slash levels prior to planting, and improve soil warming on Northeast aspects.

Site Limiting Factors include:

Moderately well to well drained soils. Submesic to mesic soil moisture in SU A; subxeric soil moisture in SU B.

Low to Moderate existing CWD levels. Small areas of **≥ 35%** slopes in SU A. Lower elevation ICH mw2 location.

Low to moderate slash hazard expected from snags, breakage, non-merch and fine slash. If burn treatment is anticipated, retain woody debris and slash on site during harvest.

One **S6** stream and one **NCD** within SU A - for **machine use**, avoid or minimize crossings on **watercourse channels** to the extent possible.

Note: A decision on whether or not Site Preparation is needed will be made during a Post-Harvest assessment. If needed, the type of Site Preparation and portion(s) of the block needing treatment will be determined at that time.

K.2 PLANTING / SEEDLING REQUIREMENTS

	STOCK				
SU	SPECIES	AGE	TYPE	CNTR	SEASON
A	Fd Cw Lw (Pl Pw)	1+0	PSB	410 / 412A	May / June
B	Fd Lw (Pl Pw)	1+0	PSB	410 / 412A	May / June

A, B

1) Manage for a mixed species stand of preferred and acceptable species to the extent possible.
2) Refer to stocking standards (Section H.2) for footnote comments on elevation, aspect, and other limitations.
3) Target Cw to moister areas and depressions in SU A.
4) Recommend **Fd** to account for **≤ 50%** of planting stock due to root disease potential (as per stocking standards in SU A).
5) On steeper slopes, plant trees on the uphill or downhill side of stumps to help minimize snow creep and snow press.
6) Expect low to moderate levels of **Hw Cw Fd Lw** natural regeneration.
7) Plant as soon as possible after harvest or site preparation. **NOTE:** A Post Harvest assessment will be completed to determine if site preparation is needed prior to planting. If site preparation is needed, the assessment will help to determine what method will be most effective.
8) In moist or wet areas, target trees to elevated microsites.
9) Monitor for signs of **ungulate browsing** during silviculture surveys.

K.3 BRUSHING

SU	PREFERRED	ALTERNATE
A, B	- Manual brushing with hand tools or power saws.	- None

Current Brush Hazard:

SU A: Very Low to **Low** levels of brush inside harvest boundaries, with few areas of **Moderate** cover. Scattered live and dead Ep throughout the area.
Current vegetation includes falsebox, black huckleberry, birch-leaved spirea, prince's pine, queen's cut, rattlesnake plantain, bracken fern, and one-leaved foamflower.

SU B: Low to **Moderate** levels of brush inside harvest boundaries.
Current vegetation includes soopolallie, falsebox, saskatoon, western yew, black huckleberry, prince's pine, and twinflower.

Future Brush Hazard:

SU A: Future hazard is **Moderate** to **High** due to submesic moisture conditions, cool aspect, existing Ep in stand, and adjacent brush sources.

SU B: Future hazard is **Moderate** to **High** due to potential for a dry shrub brush complex.

Competitor species: potential competitor species include maple, alder, saskatoon, Ep, At, Act and bracken fern.

Anticipated Timing/Constraints: Treatment needs will be assessed through periodic walkthroughs and silviculture surveys. Treatment timing will be prescribed at the time of brush assessment.

Note: Where possible, avoid brushing **Vaccinium spp** in order to maintain huckleberry picking values, and to maintain forage on site for grizzly and black bears.