# SITE PLAN CP 408 BLOCK 7
# COOPER CREEK CEDAR LTD.

## A. TENURE IDENTIFICATION

| LICENCE NO.: | CP: | BLOCK: | TIMBER MARK: | UTM: | LICENSEE NAME: |
|---|---|---|---|---|---|
| **FL A30171** | **408** | **7** | **FE5408** | **497637E, 5574551N** | **Cooper Creek Cedar (CCC)** |
| AREA UNDER TENURE (ha): | MAPSHEET/OPENING #: | | ELEVATION: | LOCATION: | |
| **41.1** | **82K.035** | | **780-890m** | **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 |
| **1.3** | - | - | - | - | - | **5.6** | - | - | **6.9** |

| NET AREA TO BE REFORESTED (ha) | | |
|---|---|---|
| SU | SU AREA DESCRIPTION | NET AREA TO BE REFORESTED: |
| A | **ICH mw2 $101^{8}$ $104^{1}$ $110^{1}$**<br>Aspect is variable but mainly ranges from southwest, to northeast, to level. Slope position is middle to crest, with short and broken, discontinuous slopes. Slopes range from 5 – 45%. Surface and subsoil soil texture is Silty Loam (SiL). Soils are moderately well to well drained. Coarse fragment content is low (10 - 30%) in surface soils, and low to moderate (15 – 50%) in subsoils. Moisture regime is predominantly mesic, and nutrient regime is poor-medium. Humus form is a thin mor (3.0 – 6.0 cm thickness on average). Rooting depth is 25 - 30cm.<br>Average stand density (all species) is 642 stems/ha. Most stems fall within the 20-50cm DBH classes, with <5% of stems in the 55-80cm DBH classes. Approximate species densities are Cw 274 stems/ha, Hw 264 stems/ha, Fd 45 stems/ha, Lw 42 stems/ha, At 6 stems/ha, Ep 5 stems/ha, and Ac and Sx with 3 stems/ha each. The understory contains moderate to high densities of Hw Cw regen, saplings and poles that are mostly suppressed and in poor condition. There are also 84 stems/ha of dead EpCwHwLw(FdSx), mainly in the 20-40cm DBH classes.<br>**SU A has Non-Sensitive soils.**<br>SU A will be logged via **ground based harvest** methods and a clearcut silviculture system. | **27.9** |
| B | **ICH mw2 $104^{9}$ $101^{1}$**<br>Aspect is variable, but mainly southwest to northeast. Slope position is middle to crest, with short, broken, discontinuous slopes. Slopes range from 10 – 45%. Surface soil texture is Silty Loam (SiL), and subsoil texture is Silt (Si). Soils are moderately-well drained. Coarse fragment content is low in surface horizons (20%) and subsoils (30%). Moisture regime is predominantly submesic, and nutrient regime is poor. Humus form is a thin mor (3.5 cm thickness on average). Rooting depth is 38cm.<br>Average stand density and description is similar to SU A (see above).<br>**SU B has Non-Sensitive soils.**<br>SU B will be logged via **ground based harvest** methods and a clearcut silviculture system. | **6.3** |
| | TOTAL NET AREA TO BE REFORESTED: | **34.2** |
| | TOTAL AREA UNDER THE PLAN: | **41.1** |

## 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 | 3.2% |
| 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.<br>• 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'<br>'KBHLP Objective 5 – Connectivity'<br>Field data collection found this block to be ICH mw2, and the block lies within Connectivity Corridor.<br>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.<br>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'<br>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).<br>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) Mat Creek (**S2 class**) is located outside the southwest harvest boundary.<br>2) See Section E.1 for Riparian Management Strategies.<br>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)<br>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.<br>2) Areas of the block where temporary access structures are required will be rehabilitated.<br>3) Specific rehabilitation measures are addressed under Section F of this Site Plan.<br>4) PAS will not exceed the recommended limit of **7.0%** and is estimated at **3.2%**.<br>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' – Does not apply - **Block 7** is located within the Meadow Creek Watershed. Matt Creek is located >30m to the West of the block. Matt Creek is a lower order stream that flows into Meadow Creek; therefore, the KBHLP streamside management zone does not apply.<br>Meadow Creek has six domestic use PODs, the closest of which is >6.0km from **block 7.** Referral letters were sent to Meadow Creek water users on August 22, 2018 and no comments or concerns were received. The distance between the block and PODs will help avoid or minimize disturbance to water quality. |

| **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.<br>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)<br>There are three Wildlife Tree Retention Areas planned for this block, totalling **5.6 ha**. Overall wildlife tree retention percentage is approximately **13.6%.**<br>The WTRA % meets the minimum % requirements stated in the FSP. |
| Result or Strategy Description | **3.3.2 – Ungulate Winter Range** |
| Applies: | NO |
| How the Result or Strategy Applies to the Site (or Rationale if it does not apply) | **Block 7** is outside designated Ungulate Winter Range. |

## 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 7**, 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 7** 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 7** 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 | 27.9 | 1057465 | See Section H - Stocking Requirements |
| B | 6.3 | 1057474 | See Section H - Stocking Requirements |

## C. MANAGEMENT OBJECTIVES & STRATEGIES

### C.1 MANAGEMENT OBJECTIVES

- Objectives for **CP 408 Block 7** include meeting visual quality objectives, protecting streams, and retaining stand structure and forage values for wildlife.
- Harvest this mature stand of **Hw Cw Fd Lw (Sx Ep At Act)** for saw logs, chips and value-added products and manage for healthy, free growing stands of planted and natural **Fd Lw Cw Hw (Pw)** in **SU A**, and **Fd Lw Cw (Pw Py Pl Hw)** in **SU B,** for similar end products.
- **Wildlife Tree Retention Areas (WTRA's):** Three patches are planned for retention, totaling **5.6 ha** in size, with similar to more open stand structure than the harvest area.
- **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 7** is outside designated Ungulate Winter Range.

Slope values are low to moderate in SU A and B, with few steeper pitches. Lower to middle elevation ICH mw2 site conditions. Aspect is variable but mainly ranges from southwest to northeast, and level, with short broken discontinuous slopes. Middle to crest slope position. Vegetation cover is very low to low over most of the unit. Existing coarse woody debris levels are low to moderate (≤ 40cm diameter) in most areas. Mat Creek is located to the west of the block, and two NCD channels are within the block. Wildlife sign included bear activity, a moose antler shed, and woodpecker excavations.

**SU A and B:** Stand type is **Hw4Cw3Fd2Lw1(SxEpAtAct)**. Low densities of Fd Cw Hw Lw Act vets are present.

Average stand density (all species) is 642 stems/ha. Most stems fall within the 20-50cm DBH classes, with <5% of stems in the 55-80cm DBH classes. Approximate species densities are Cw 274 stems/ha, Hw 264 stems/ha, Fd 45 stems/ha, Lw 42 stems/ha, At 6 stems/ha, Ep 5 stems/ha, and Ac and Sx with 3 stems/ha each. The understory contains moderate to high densities of Hw Cw regen, saplings and poles that are mostly suppressed and in poor condition, with dense Hw ingress seen in more open areas. There are also 84 stems/ha of dead EpCwHwLw(FdSx), mainly in the 20-40cm DBH classes.

Forest cover adjacent to the block includes a significant amount of immature stands in cutblocks harvested between 1976 and 2005, interspersed with mature stands.

**Actions prescribed**:

Total Area specified for the retention of wildlife trees: **5.6 ha** (13.6% of gross area)

**Wildlife Tree Retention Areas (WTRA's):**

**WTRA-1 (1.0 ha) Hw7Cw3(Fd):** This WTRA is located in the Southern part of the block and contains a semi-open mature stand with developed understorey. Density is 100 - 200sph; Height range is 18 - 27m; DBH range is 20 - 40cm; Age class is 5 - 7. Crown closure is 10%. Few Hw vets are present along with few snags of various species. High understory densities, woodpecker activity, and two old trails were noted in the area.

**WTRA-2 (3.9 ha) Fd6Lw2Cw1Hw1:** This WTRA is located in the West central area of the block, associated with a ridge top feature. Density is 400 - 500 sph; Height range is 20 - 32m; DBH range is 18 – 50cm; Age class is 5 – 7. Crown closure is 20%. Fd and Lw vets are present along with few Fd Lw snags. Attributes include moderate levels of CWD, steep rocky ground in the south end, browsing sign on maple, and bear bark stripping on smaller Cw.

**WTRA-3 (0.7 ha) Fd7Hw1Cw1Lw1:** This WTRA is located in the East central area of the block, associated with a ridge top feature. Density is 300 sph; Height range is 20-32m; DBH range is 18 – 45cm; Age class is 5 – 7. Crown closure is 20%. Fd vets are present along with few Fd Lw snags. Attributes include a mixed immature to mature open structure, snags with cavities, and rocky terrain.

**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** & **B** where operationally feasible. Snags with evidence of wildlife use are preferred.

#### C.2c FISHERIES

There is one **S2 class** stream (Mat Creek) that flows >30m outside the southwestern harvest boundary. This stream flows in a southeast direction and drains into Meadow Creek. ≥ **20%** of the basal area will be retained within the **20m RMZ** in areas outside the block.

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 7** is surrounded on most sides by immature stands where previous harvesting has occurred; Windthrow hazard will be **Very Low** for these areas. The remaining sides have adjacent mature stands where Windthrow hazard is **Moderate**. Mature stands adjacent to SU A and B are similar to more open, and have already been partially exposed to winds from previous harvesting, and road and natural openings.

The block is medium in size and irregular in shape, with a lower slope location.

Soils in SU A and B are moderately well to well drained. Rooting depth is 25 – 30cm.

**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 | $101^{8}\ 104^{1}110^{1}$ | - |
| B | 1 | ICH | mw | 2 | $104^{9}\ 101^{1}$ | - |

## 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) |
|---|---|---|---|---|
| Mat Creek | S2 | N | - | **30m RRZ:** No harvesting will take place in the 30m RRZ of Mat Creek. Harvest boundary was located ≥30m from Mat Creek. |

**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). |
|---|---|---|---|
| Mat Creek | Y | A | **20m RMZ: ≥20%** of the basal area will be retained within the 20m RMZ outside the harvest boundary. Portions of the 20m RMZ that fall within the block will be harvested as per SU A. (See additional management strategies below) |

**NON-CLASSIFIED (NC) RIPARIAN AREAS**

| RIPARIAN/ LAKE ID | SU XREF | MANAGEMENT STRATEGIES |
|---|---|---|
| NCD-7-1,2 | A | Two NCD channels are present within SU A; one in the central area of the block, and one at the north end. NCD channels have been marked in the field with red ribbon. (See management strategies below) |

**Section E.1 continued**

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

1) **Mat Creek (S2)** – stream had moderate flow, average channel width of 5.2m, and average gradient of 16%. Stream connects to Meadow Creek to the South.
2) **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.
3) 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.
4) All **machine trails** and **crossings** (NCD) 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.
5) **All surface drainage patterns** should be maintained and any that are disrupted as a result of harvesting operations should be restored immediately.
6) **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.
7) **Basal area retention** levels for the in-block RMZ (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.<br>• 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.<br>• 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 in SU A; Lw, Cw, Hw, Pw, Py, Pl 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.<br>• 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).<br>• Stumping or pushover harvesting treatments are not suitable due to low sign of Armillaria, and high soil hazards. |
| | | Host factors | **3-4** | L-M | |
| | | Inoculum potential | **0** | L | |
| | | Disease factors | **3-8** | L-M | |
| | | | **14-20** | **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 | ≤5 | Lw forms 7% of the current stand density and 14% of the current stand volume in SU A and B. Mistletoe infected snags and live Lw noted in and outside block boundary (low incidence). | Low |
| A, B | IBD | ≤3 | Very Low incidence of Douglas-fir beetle, with possible few grey attack stems. Fd forms approximately 7% of the current stand density and 17% of the current stand volume in SU A and B (DBH range 25-65cm). | Low |
| A, B | DSB | 0 | Pw is absent or present in 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 (next page)**

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

Future risks include seedling drought mortality and stress on ridges and warmer aspects, especially in summer months.

**SU A and B:** Average species composition of the pre-harvest stand (stand density) is approximately **Cw 43% Hw 41% Fd 7% Lw 7% At 1% Ep 1% (Sx Act)**. Few Fd Cw Hw Lw Act vets are present in the unit.

The age of mature trees in the stand, based on ages taken during cruising, is **83 - 145 years** (average 113 years).

## E.3 VEGETATION MANAGEMENT STRATEGIES

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

**Current Brush Hazard:**

**SU A & B: Very Low** to **Low** levels of brush inside harvest boundaries.

**Future Brush Hazard:**

**SU A:** Future hazard is **Moderate** to **High** due to mesic moisture conditions and adjacent brush sources.

**SU B:** Future hazard is **Low** to **Moderate** due to submesic moisture conditions and adjacent brush sources.

Potential competitor species include alder, maple, birch, cottonwood, aspen, thimbleberry, and bracken fern. Manual brushing of deciduous for conifer release has been required on adjacent and similar nearby sites. Continuous birch and aspen snags were noted.

**Species Complex:**

**SU A:** Current vegetation includes yew, falsebox, huckleberry, prince's pine, rattlesnake plantain, queens cup, and minor foamflower, oak fern and devils club.

**SU B:** Current vegetation includes Douglas maple, yew, falsebox, huckleberry, bracken fern, prince's pine, rattlesnake plantain, and queens cup.

**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** to **Moderate** with 5 - 25% ground cover. CWD is predominantly composed of 15 - 40cm diameter stems of Cw, Hw, Lw, Fd, Ep and At. Most stems are older with no bark or losing bark, with some slightly suspended less decayed pieces. More recent blowdown was noted in isolated areas near harvest boundaries.

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 7** 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 | Moderate | High | 61 | 64 | N/A |
| B | High | Moderate | High | 60 | 60 | N/A |

### 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): **3.2%**

**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%** were identified in parts of SU A and B, and are noted on the **Harvest Plan map**.

### 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 and B: Roadside harvest with landings. Favorable skidding with smaller areas of adverse 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 riparian 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.<br>Planted trees and natural regeneration will include **Fd Lw Cw Hw (Pw Sx Bl)** in SU A, and **Fd Lw Cw (Hw Pw Py Pl Sx)** in SU B.<br>**Wildlife Tree Reserve Areas (WTRA's):** 5.6 ha<br>**Leave trees**<br>No mature leave trees are planned in SU A, B.<br>**Snags**<br>Retain safe snags **<5m tall** in **SU A** & **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 Regime # | SU A – 1057465<br>SU B - 1057474 | FREE GROWING ASSESSMENT PERIOD (years) | |
|---|---|---|---|
| Name: | SU A - ICH mw2 101<br>SU B – ICH mw2 104 | | |
| SU | REGENERATION DATE (YEARS) | EARLY | LATE |
| A | 4 | 9 | 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 | Fd[58] Lw Cw Hw[201] Pw[31] | Lw Pw – 2.0<br>Fd – 1.4<br>Cw Hw – 1.0 | Bl[10,13,500] Sx[10,13] | Bl Sx – 1.0 | 1800 | 700 | 10,000 |
| B | Cw[10,201] Fd[58] Lw Pw[31] | Lw Pw – 2.0<br>Fd – 1.4<br>Cw – 1.0 | Pl Hw Py[9,14,203] Sx[10,13] | Pl – 2.0<br>Hw Py Sx – 1.0 | 1800 | 700 | 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 | 1200 | 700 | 600 | 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. |
| **500** | DSE: Advance Bl regen: <1.5 m tall at time of harvest, >75% live crown, >10cm leader, no scars, forks, crooks, or sweeps, and Apical dominance >1 as measured by comparing ratio of leader height to length of most recent branch. |
| * | 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 middle elevations of the ICH mw2 biogeoclimatic unit.

SU A and B have variable aspects, and are generally northeast or southwest facing (refer to map).

**Py** is potentially an acceptable species for planting in parts of SU B based on aspect and elevation.

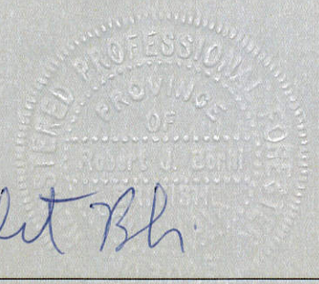
See Section K for planting stock recommendations.

## I. ADMINISTRATION

**SITE PLAN PREPARED BY (RPF SIGNATURE AND SEAL):**

Robert Borhi
RPF Name (Printed)

Date: 10/12/2018 RPF #: 3026




RPF Signature and Seal

**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 | Moderate (12) | Moderate (12) | | | | |
| Surface Erosion | High (26-27) | High (27) | | | | |
| Forest Floor Displacement | High (13-17) | High (17) | | | | |
| Mass Wasting | Moderate (33) | Moderate (23) | | | | |
| **Harvest System** | Ground based | Ground based | | | | |
| **TOTAL AREA** | 34.1 | 7.0 | | | 41.1 | |
| **Wildlife Tree Patches / NP Nat** | | | | | | % WTP/IMM |
| WTRA | 4.9 | 0.7 | | | 5.6 | 13.6 |
| NP brush | - | - | | | - | - |
| **Permanent Access Structures** | | | | | | % Disturbance |
| Proposed roads | 0.5 | 0 | | | 0.5 | 1.2 |
| Existing roads | 0.8 | 0 | | | 0.8 | 2.0 |
| Landings | 0 | 0 | | | 0 | 0 |
| **Total disturbance permanent access structures** | 1.3 | 0 | | | 1.3 | 3.2 |
| **NET AREA TO BE REFORESTED** | 27.9 | 6.3 | | | 34.2 | |
| 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 road** (permanent access): Existing
SU A: 89m x 10m = 0.09ha
Section 2: 133m x 10m = 0.13 ha
Section 2: 261m x 5m = 0.13 ha (half width)
Section 4: 436 x 10m = 0.44ha

**Proposed roads** (permanent access):
SU A: Spur 2-7: 552m x 10m = 0.55 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.<br>- Piling treatment during dry weather conditions or when soils not saturated.<br>- 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.<br>- * Mechanical site preparation (e.g.: mounding, scarification) where necessary and feasible, combined with brush/slash piling, utilizing an excavator.<br>- ** 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 East - NE aspects.

**Site Limiting Factors include:**

Moderately Well to Well drained soils. Mesic (SU A), Submesic (SU B).

Low to Moderate existing CWD levels. Few areas of **≥35%** slopes. 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.

No streams within harvest boundary. 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 Lw Cw (Pw) | 1+0 | PSB | 410 / 412A | May / June |
| B | Fd Lw Cw (Pw Pl Py) | 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.
4) On dryer (west to southwest facing) sites, increase **Fd** and **Lw** and in the planting mixture (also **Pl** and **Py** in SU B).
5) Recommend **Fd** to account for **≤ 50%** of planting stock due to root disease potential.
6) On steeper slopes, plant trees on the uphill or downhill side of stumps to help minimize snow creep and snow press.
7) Expect low to moderate levels of **Hw Cw Fd Lw** natural regeneration.
8) 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.
9) In moist or wet areas, target trees to elevated microsites.
10) 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 & B: Very Low** to **Low** levels of brush. Higher brush cover noted in adjacent older cutblocks and encroaching at boundaries.

**SU A:** Current vegetation includes yew, falsebox, huckleberry, prince's pine, rattlesnake plantain, queens cup, and minor foamflower, oak fern and devils club.

**SU B:** Current vegetation includes Douglas maple, yew, falsebox, huckleberry, bracken fern, prince's pine, rattlesnake plantain, and queens cup.

**Future Brush Hazard:**

**SU A:** Future hazard is **Moderate** to **High** due to mesic moisture conditions and adjacent brush sources.

**SU B:** Future hazard is **Low** to **Moderate** due to submesic moisture conditions and adjacent brush sources.

**Competitor species:** potential competitor species include alder, maple, birch, cottonwood, aspen, thimbleberry, and bracken fern. Manual brushing of deciduous for conifer release has been required on adjacent and similar nearby sites. Continuous birch and aspen snags were noted.

**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.