

**BC Timber Sales
Stuart-Nechako Business Area**



**Fort St. James
FOREST STEWARDSHIP PLAN**

2022 Replacement

Term: September 1, 2022, to August 31, 2027

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1.0 INTERPRETATION

1.1 Definitions

In this FSP:

“Agreement Holder” means the holder of an agreement in the form of a licence, a permit or an agreement referred to in section 12 of the Forest Act, or a pulpwood agreement.

“Archaeological Impact Assessment” is a process where a trained professional looks at an archaeological site and development plans to determine what impact the proposed development will have on the site.

“Artificial Range Barrier” refers to fencing, cattle guards, or windrows which serve as physical or psychological barriers or limitations to livestock movement.

“Cultural Heritage Resource” (or CHR) is defined as an object, site or the location of a traditional societal practice that is of historical, cultural or archaeological significance to British Columbia, a community or an aboriginal people.

“FDU” means a forest development unit under this FSP.

“MOF” means the Ministry of Forests.

“FPPR” means the *Forest Planning and Practices Regulation* B.C. Reg. 14/2004.

“FRPA” means the *Forest and Range Practices Act*, SBC 2002, c.69.

“FSP” means this Forest Stewardship Plan.

“GAR” means the *Government Action Regulation* B.C. Reg.582/2004.

“Information Sharing” is defined as making reasonable efforts to communicate with affected First Nations or other resource users with the purpose of soliciting input from the potentially affected First Nation or stakeholder.

“Invasive Plant Regulation” means the Invasive Plant Regulation B.C. Reg. 18/2004.

“Machine Free Zone”, or MFZ, is defined as an area immediately adjacent to a riparian or other specified feature, in which Primary Forest Activities may occur but machines used to facilitate primary forest activities may not tread or otherwise disturb the soil.

“MIRR” means the Ministry of Indigenous Relations and Reconciliation.

“MoE” means the Ministry of Environment

“Natural Range Barrier” refers to topographical and vegetative landscape features, such as steep mountains, rocky terrain, rivers, gullies, standing and downed timber, and/or shrubs which serve as physical or psychological barriers or limitations to livestock movement.

“Wildland Urban Interface Area” refers to any area where combustible wildland fuels (vegetation) are found adjacent to homes, farm structures or other buildings.

Words and expressions not defined in this document have the meaning given to them in the *Forest and Range Practices Act* (FRPA) and the regulations made under it, unless context indicates otherwise.

2.0 TERM AND COMMENCEMENT

The Term of this Replacement FSP is five (5) years beginning on the date specified by the Minister upon approval.

3.0 APPLICATION

This FSP applies to:

1. A timber sale license, road permit, or forestry licence to cut within the BCTS FDU, advertised or issued by the Timber Sales Manager following the approval of this FSP and;
2. An access road constructed by the Timber Sales Manager, within the BCTS FDU, to an area to be harvested under a timber sales license referred to in subsection 1, following the approval of this FSP.

4.0 FOREST DEVELOPMENT UNIT

Appendix 1 provides an Overview Map (1:1,000,000 scale) indicating BC Timber Sales Fort St. James Timber Pricing Areas within the Stuart Nechako Forest District. Appendix 2 provides an Overview Map (1:1,000,000) of the BCTS Forest Development Unit (BCTS FDU) pertinent to this Forest Stewardship Plan. The BCTS FDU generally aligns with BCTS Timber Pricing Areas, with the addition of the Community Forest Agreement K4B, within which BC Timber Sales has a volume apportionment. FSP content maps (1:100,000 scale maps) are made available digitally through Appendix 5.

5.0 RESULTS & STRATEGIES

5.1 Land Use Objectives

5.1.1 Agriculture Development Areas and Settlement Reserve Areas

Where the Timber Sales Manager carries out or authorizes primary forest activities, within the BCTS FDU, within an Agricultural Development Area, or Settlement Reserve Area, as specified in the *Order of the Minister of Agriculture and Lands – Establishing Land Use Objectives under section 93.4 of the Land Act for the Purposes of the Forest and Range Practices Act (November 21, 2006)* the primary forest activities will comply with the Order.

5.1.2 Landscape Biodiversity Objectives for the Prince George TSA

In respect of the Order - *Establishing Landscape Biodiversity Objectives for the Prince George Timber Supply Area* (October 20, 2004), for areas to which this FSP applies, that are within the applicable Natural Disturbance Units and Merged Biogeoclimatic Units within the BCTS FDU, the Timber Sales Manager will:

1. Participate with Prince George TSA agreement holders to collaboratively comply with the Order, Participation will include:
 - a) BC Timber Sales representation on the PG TSA Licensee Landscape Objectives Working Group (LLOWG) for the purpose of collaborating with PG TSA tenure holders to implement, monitor and maintain the objectives specified in the Order.
 - b) annually provide the LLOWG with a spatial update of the cutblocks harvested and roads constructed under the authorization of the Timber Sales Manager in the previous fiscal year (April 1 – March 31). Cost share in the creation of an updated disturbance layer for the PG TSA and the analysis required to assess collective BCTS and agreement holder performance relative to the objectives specified in the Order.
 - c) planning cutblocks and roads that maintain old forest retention and old interior forest objectives and comply with young forest patch size distribution objectives.
 - d) where analysis indicates old forest and old interior forest conditions within merged biogeoclimatic units are < 1000 hectares in surplus of targets, Timber Sale Licenses will not be issued without prior communication with applicable agreement holders (operating within the same merged biogeoclimatic units) to ensure a deficiency is not created.
 - e) not issuing Timber Sale Licenses within merged biogeoclimatic units where analysis results indicate old forest or old interior forest conditions are below objective targets, until an applicable recruitment strategy has been approved.
 - f) collaborating with PG TSA agreement holders to design and implement approved recruitment strategies, where old forest retention or old interior forest objectives cannot be met in the short term.

- g) collaborating with PG TSA agreement holders to provide a rationale where young forest patch size distribution objectives cannot be achieved in the short term and creating and implementing an approved strategy to achieve the young forest condition specified in the order in the shortest time practicable.
- h) annually submit, to the MOF, updated analysis results for the previous April 1 to March 31 period, to demonstrate compliance with *Old Forest Retention* and *Old Interior Forest Objectives* specified in the Order, and
- i) submit to the MOF a minimum of one analysis update of the young forest patch size distribution, once every five years, to demonstrate compliance with the *Young Forest Patch Size Distribution Objectives*, as specified in the Order.

For the purposes of this result or strategy, the following definitions apply: *Natural Disturbance Unit*, *Merged Biogeoclimatic Units*, *Old Forest*, *Old Interior Forest* and *Young Forest* are defined as per the Implementation Policy for the Order Establishing Landscape Biodiversity Objectives for the Prince George (PG) Timber Supply Area (TSA).

5.1.3 Non-Spatial Old Growth Objectives for Community Forest Agreement K4B

In respect of the Order – Establishing Provincial Non-Spatial Old Growth Objectives (June 30, 2004) applicable to Community Forest Agreement K4B (TFL42 Landscape Unit), the Timber Sales Manager will:

1. Participate with the Community Forest Agreement K4B tenure holder to collaboratively comply with the Order, when planning and authorizing Timber Sale Licenses, and/or road construction within Community Forest Agreement K4B.
2. Maintain old forest by Natural Disturbance Type and Biogeoclimatic Zone within Community Forest Agreement K4B according to the age of old forest and the percentage of old forest retention specified in the Order (as identified below).

Natural Disturbance Type	Biogeoclimatic Zone	Age of Old Forest	Percent Old Forest Retention in Low Biodiversity Emphasis
2	ESSF	➤ 250 yrs.	➤ 9 %
3	SBS	➤ 140 yrs.	➤ 11 %

3. Participate with the Community Forest Agreement K4B tenure holder when planning, aggregating and authorizing Timber Sale Licenses to collaboratively achieve the recommended patch size distribution targets pertaining to disturbed areas 20 years or younger (as identified below).

Recommended Distribution of Patch Sizes (disturbed areas 20 years or younger) for NDT2

Patch Size (Ha)	% Forest Area within Landscape Unit
< 40	30 - 40
40 - 80	30 - 40
80 - 250	20 - 40
Patch size refers to a single cutblock or an aggregation of cutblocks. Note: These values represent a vision of desired future conditions. They will not be immediately achievable in landscape units.	

** Source: Ministry of Forests, Landscape Unit Planning Guide – March 1999

Recommended Distribution of Patch Sizes (disturbed areas 20 years or younger) for NDT3

Patch Size (Ha)	% Forest Area within Landscape Unit
< 40	10 - 20
40 - 250	10 - 20
250 - 1000	60 - 80
<p>Patch size refers to a single cutblock or an aggregation of cutblocks. Note: These values represent a vision of desired future conditions and will not necessarily be initially achievable in a watershed where forest operations are just beginning.</p>	

** Source: Ministry of Forests, Landscape Unit Planning Guide – March 1999

5.2 Objectives Set by Government FRPA 149

5.2.1 Soils FPPR 5

Where the Timber Sales Manager carries out or authorizes primary forest activities on areas within the BCTS FDU, the results or strategies for the objective set by government for soils in section 5 of the FPPR are the practice requirements of FPPR section 35 and section 36 as written on the date this FSP is submitted for approval and subsection 1 below.

- In addition to FPPR section 35 (4), soil disturbance may exceed the limits specified in section 35 (3) of the FPPR if the Timber Sales Manager undertakes or authorizes one of the following activities:
 - harvesting and land clearing activities in a Gravel Pit Reserve to facilitate gravel extraction, or
 - establishing a fuel break within a Wildland Urban Interface area for the protection of values such as human safety, property and infrastructure.

5.2.2 Wildlife FPPR 7

5.2.2.1 Species at Risk – Northern Caribou

In respect of the *Notice – Indicators of the Amount, Distribution and Attributes of Wildlife Habitat Required for The Survival of Species at Risk in The Fort St. James Forest District*, for Northern Caribou within the AT, ESSF, BWBS or SBS biogeoclimatic zones when conducting or authorizing primary forest activities within the BCTS FDU, the Timber Sales Manager will:

- Work cooperatively with other agreement holders and the appropriate agency to spatially identify areas capable of providing Species at Risk Elements for Northern Caribou that:
 - are distributed within locations specified in the Notice.
 - contain the Habitat Attributes described in the Notice and
 - do not result in an impact to the mature timber harvesting landbase in excess of 3,268 hectares.
- Assess and confirm, at the site level, that the spatially identified areas (in subsection 1) possess the desired Habitat Attributes. Modify the areas selected to achieve the desired amount, distribution and habitat attributes specified in the Notice.
- Report the outcomes of subsections 1 and 2 to the appropriate agency prior to proceeding with subsection 4 and 5.
- Work cooperatively with other agreement holders and the appropriate agency when planning (locating and designing) cutblocks and roads, to avoid detrimental impacts to the refined areas in subsection 2.
- Conduct or authorize primary forest activities (consistent with subsection 4) to avoid detrimental impacts to Northern Caribou calving range, rutting range, connectivity matrix or mineral licks, as described by the Habitat Attributes identified in the Notice.

5.2.2.2 Winter Survival – Northern Caribou

In respect of the *Notice – Indicators of the Amount, Distribution and Attributes of Wildlife Habitat Required for The Winter Survival of Ungulate Species in Fort St. James Forest District Within the Prince George Timber Supply Area* for Northern Caribou and Mountain Goat (December 2004), when conducting or authorizing primary forest activities within the BCTS FDU, the Timber Sales Manager will:

1. Through the establishment of Ungulate Winter Range #U-7-019, be exempted from having to prepare results and strategies for the amount, distribution and attributes of wildlife habitat for the winter survival of Mountain Goat specified in the Notice.
2. Work cooperatively with other agreement holders and the appropriate agency to spatially identify areas capable of providing elements for the winter survival of Northern Caribou that:
 - a) are distributed within locations (high & low elevation) specified in the Notice,
 - b) contain the Habitat Attributes described in the Notice and
 - c) do not result in an impact to the timber harvesting landbase in excess of 18,237 hectares.
3. Assess and confirm, at the site level, that the spatially identified areas (in subsection 2) possess the desired Habitat Attributes. Modify the areas selected to achieve the desired amount, distribution and habitat attributes specified in the Notice.
4. Report the outcomes of subsections 2 and 3 to the appropriate agency prior to proceeding with subsection 5 and 6.
5. Work cooperatively with other agreement holders and the appropriate agency when planning (locating and designing) cutblocks and roads, to avoid detrimental impacts to the refined areas in subsection 3.
6. Conduct or authorize primary forest activities (consistent with subsection 5) to avoid detrimental impacts to Northern Caribou high elevation and low elevation range and anti-predation matrix, as identified in the Notice.

5.2.3 Water, Fish, Wildlife & Biodiversity in Riparian Areas FPPR 8

Where the Timber Sales Manager carries out or authorizes primary forest activities within the BCTS FDU, the results or strategies for the objective set by government for water, fish, wildlife and biodiversity that is set out in section 8 of the FPPR are the practice requirements in sections 47, 48, 49 (1)(3)(4)(5), 50, 51, 52(2) and 53 of the FPPR, as written on the date this FSP is submitted for approval and sections 5.2.3.1, 5.2.3.2 and 5.2.3.3 below.

5.2.3.1 Lake Riparian Classes FPPR 12.3(3)

1. In respect of lakes, the riparian classes and associated riparian management areas, riparian reserve zones and riparian management zones are set out in Table 1 (located below).

Table 1: Minimum Lake RMA, RRZ and RMZ Widths

Lake Riparian ¹ Class	Lake Subclass	Lakeshore Classification	Riparian Management Area (meters)	Riparian Reserve Zone (meters)	Riparian Management Zone (meters)
L1 – A (Lake 1000 Ha's or greater)	A-M ² , A ²	A – M	250	50	200
		A	250	200	50
	A-M ² , B ²	A – M	250	50	200
		B	100	50	50
	B ³	B	100	50	50
L1 – B (Lake > 5 Ha's, but < 1000 Ha's)	A-M ² , B ²	A – M	250	50	200
		B	100	50	50
	A	A	250	200	50
	B	B	100	50	50
	C	C	100	30	70
	D	D	100	10	90
	E	E	50	10	40
L3 (1 to 5 Ha's)			30	0	30

Note 1 Lake Riparian Classes are defined in Section 49 of the Forest Planning & Practices Regulation. Lake Subclasses have been derived from the Lakeshore Classification: Fort St James Forest District (dated August 11, 2000).

Note 2 A lake can have portions of the lakeshore identified as potential lake trout spawning habitat – Subclass A-M and A. The same lake can have portions of the lakeshore not identified as potential spawning habitat - Subclass B.

Note 3 Great Beaver Lake (Subclass B) has no designated reserve zone (due to high windthrow potential and flat slopes).

5.2.3.2 Restrictions in a Riparian Reserve Zone FPPR 12.3(5)

- In addition to subsection 2 and FPPR section 51 (1), trees within a riparian reserve zone, must not be cut, modified or removed, except for the following purposes:
 - harvesting within a Wildland Urban Interface area, where retaining mature or immature trees poses a significant risk to public safety, or infrastructure.
- For each subclass of L-A or L-B lake set out in Table 1: cutting, modification, or removal of trees within the Riparian Reserve Zone:
 - is not permitted within the 10-meter portion of the reserve immediately adjacent to the lake.
 - In addition to FPPR section 51 (1), is permitted in that portion of the riparian reserve, not referred to in subsection 2 a), only if the cutting, modification or removal is to:
 - enhance recreational opportunities and/or visual quality objectives or
 - enhance wildlife habitat and/or biodiversity values.
 - is not permitted under subsection 2 b) if fisheries and/or water quality values will be negatively impacted by lakeshore soil disturbance or upslope lakeshore soil erosion associated with primary forestry activities.

5.2.3.3 Minimum Basal Area Retention in the Riparian Management Zone FPPR 12(3)

Where the Timber Sales Manager carries out or authorizes primary forest activities, the results or strategies for the objective set by government for water, fish, wildlife and biodiversity that is set out in section 8 of the FPPR are:

- The cutblock is designed to retain basal area in the riparian management zone in accordance with the levels specified in Table 2 (unless specified in subsection 4) for the applicable riparian classification and windthrow hazard;
- Cut block design will be guided by existing literature such as (but not limited to) the Windthrow Handbook for British Columbia Forests (Stathers, Rollerson, and Mitchell, 1994). Windthrow Assessments will generally be conducted using the FLNRO FS 712 Windthrow Assessment Field Cards or similar accepted methodology, and

3. The primary forest activities (unless specified in subsection 4) comply with the basal area retention specified in Table 2.
4. A minimum 5-meter Riparian buffer will be retained adjacent Non-Classified Wetlands (NCW's) and Non-Classified Lakes (NCL's).

Table 2: Minimum Basal Area Retention in Riparian Management Zone

Riparian Classification	Minimum Basal Area Retention in Riparian Management Zone		
	Windthrow Hazard (in RRZ or RMZ)		
	Low	Moderate	High / Very High
S1-A	30%	30%	50%
S1-B, S2, S3	15%	40%	60%
S4	35%	50%	60%
S5	35%	80%	100%
S6	50%	60%	60%
W1, W5	20%	35%	50%
L1-A (A-M), L1-B (A-M)	10%	15%	20%
L1-A (A), L1-B(A),	0%	0%	0%
L1-A (B)&L1-B (B), L1-A (C), L1-B (C)	15%	25%	40%
L1-B(D), L1-B(E)	10%	30%	60%
W3, L3	50%	60%	60%

5.2.4 Fish Habitat in Fisheries Sensitive Watersheds FPPR 8.1

Within the Stuart Nechako Forest District, no fisheries sensitive watersheds were identified in Schedule 2 of the FPPR. Fisheries sensitive watersheds have since been established by regulation and are addressed in section 5.3.3 of this FSP.

5.2.5 Water in Community Watersheds FPPR 8.2

No community watersheds have been designated within the Stuart Nechako Forest District.

5.2.6 Wildlife and Biodiversity at the Landscape Level FPPR 9

5.2.6.1 Maximum Cutblock Size FPPR 12.4

Where the Timber Sales Manager carries out or authorizes primary timber harvesting, within the BTCS FDU, the results or strategies for the objective set by government for wildlife and biodiversity at the landscape level that is set out in section 9 of the FPPR are:

1. The cutblock harvest area will comply (except as per subsection 2 below) with young forest patch size distribution, old forest and old interior forest targets specified in the Order - *Establishing Landscape Biodiversity Objectives for the Prince George Timber Supply Area* (October 20, 2004), determined in accordance with result or strategy 5.1.2.
2. Harvesting within Community Forest Agreement K4B, will comply with result and strategy 5.1.3.
3. To emulate natural disturbance, cutblocks will be designed to follow natural boundaries (e.g., young forest edge, wetland complexes, riparian areas) and include windfirm wildlife tree retention areas that are representative of the variety of naturally occurring: tree species (including deciduous), stand structure (e.g., canopy layers, diameter distribution, ages, snags, wildlife trees and understory vegetation) and wildlife habitat features.

5.2.6.2 Harvesting Adjacent to another Cutblock FPPR 12.4

Where the Timber Sales Manager carries out or authorizes primary timber harvesting, within the BCTS FDU, the results or strategies for the objective set by government for wildlife and biodiversity at the landscape level that is set out in section 9 of the FPPR are:

1. Harvesting will comply (except as per subsection 2 below) with young forest patch size distribution, old forest, and old interior forest targets specified in the Order - *Establishing Landscape Biodiversity Objectives for the Prince George Timber Supply Area* (October 20, 2004), determined in accordance with result or strategy 5.1.2.
2. Harvesting within Community Forest Agreement K4B, will comply with result and strategy 5.1.3.

5.2.7 Wildlife and Biodiversity at the Stand Level FPPR 9.1

5.2.7.1 Stand Level Retention

Where the Timber Sales Manager carries out or authorizes primary forest activities within the BCTS FDU, the results or strategies for the objective set by government for wildlife and biodiversity at the stand level that is set out in section 9.1 of the FPPR are:

1. At the end of any 12-month period beginning on April 1, the total area covered by wildlife tree retention areas that relate to one, or more cutblocks, completely harvested under the authority of this FSP, will be a minimum of 10% of the total area of the cutblocks.
2. For the purposes of subsection 1, a wildlife tree retention area may relate to more than one cutblock, if all the cutblocks that relate to the wildlife tree retention area collectively meet the requirements of subsections 1 and 3.
3. At the completion of harvesting, the total amount of wildlife retention areas that relate to a timber sale license is a minimum of 7 % of the total cutblock area of the timber sale license, unless the timber sale license pertains to:
 - a) an area incompatible with the establishment of a free-growing stand (based on the intended landuse designation); or
 - b) minor salvage volume consisting of individual patches less than, or equal to 2,000 m³; or
 - c) harvesting related to research trials; or
 - d) harvesting within a Wildland Urban Interface area, where stand level retention may pose a significant risk to public safety, or infrastructure.

5.2.7.2 Wildlife Tree Retention Areas – Harvesting Restrictions FPPR 12.5

Primary forest activities are not permitted within a wildlife tree retention area unless the following conditions occur within the BCTS FDU:

1. The trees on the net area to be reforested of the cutblock to which the wildlife tree retention area relates, have developed attributes that are consistent with a mature seral condition; or
2. One, or more, wildlife tree retention replacement areas are established, that:
 - a) are contiguous with the harvest area, or if limited ecological options exist, within such distance to the harvest area that the wildlife tree retention area values benefit the harvest area.
 - b) provide equivalent area, and at minimum, the structural/ecological characteristics and wildlife habitat values consistent with the original wildlife tree retention area from which the timber is being harvested.
3. Subject to subsection 2., circumstances exist which warrant the replacement of a wildlife tree retention area, including:
 - a) the existing wildlife tree retention area is rendered ineffective (e.g., few ecological attributes remain such as high-value biodiversity/wildlife tree or habitat features) due to stand mortality, or windthrow.
 - b) the existing wildlife tree retention area poses a significant forest health risk, consistent with regional forest health strategies, to adjacent healthy and susceptible timber types or plantations.
 - c) removal of trees within the retention area is necessary to address safety concerns.
 - d) harvest of the retention area (or parts thereof) is necessary to facilitate subsequent road access.
4. In those instances where wildlife tree retention areas are replaced, a written rationale will document the process and steps taken to ensure ecological/wildlife tree attributes are maintained or enhanced. Wildlife tree retention areas harvested (or parts thereof) and their replacements will be spatially tracked and updated accordingly in appropriate government databases (e.g., RESULTS).

5.2.8 Cultural Heritage Resources FPPR 10

Where the Timber Sales Manager carries out or authorizes primary forest activities within the BCTS FDU, the results or strategies for the objective set by government for cultural heritage resources that is set out in section 10 of the FPPR are:

1. Identify the First Nation traditional territories located within the FDU by utilizing the government maintained (Ministry of Indigenous Relations and Reconciliation) Profiles of Indigenous Peoples Database (PIP).
2. In consideration of subsection 1, determine those First Nations potentially affected by proposed development activities associated with primary forest activities.
3. Request First Nation input (preferably through face-to-face discussions with Chief and Council, or a designate) pertaining to cultural heritage resources of continuing importance and areas of interest, or management concern, at a landscape level.
4. Where planning forest management activities within the FDU, First Nation LandUse Plans, if made available, will be considered, to the extent the plans are not in direct conflict with government objectives or policy.
5. Strive to undertake meaningful consultation with potentially affected First Nations, identified in subsection 2, consistent with the Province of British Columbia consultation procedures, as existing and updated during the term of this FSP, and in consideration of agreements such as the *Carrier Sekani Pathway Forward 2.0 Amending Agreement #2 (2022)*.
 - a) share site specific information (pertaining to proposed development activities) with potentially affected First Nations. Operational maps outlining proposed and existing cutblocks and roads and other pertinent forest management information will be accompanied by block summaries and a description of the management intent.
 - b) solicit First Nation input (by means of face-to-face meetings, or through written correspondence) regarding any aboriginal interests (Aboriginal Rights & Title) that may potentially be impacted by the proposed development activities.
 - c) document information exchange efforts. Summarize meeting minutes, input provided, concerns expressed, and recommendations provided. Provide feedback to First Nations within a 30-day time frame, including proposed resolutions or BCTS management intent to issues brought forth.
 - d) any CHR features identified during site level planning and assessment activities will be shared with the potentially affected First Nation. This includes sharing the results of the assessment and the intended management strategy to address the findings or First Nation input.
 - e) re-initiate information sharing and consultation where the initial information sharing described in subsection a) has taken place more than three years prior.
 - f) conduct archaeological impact assessments within proposed development areas:
 - i. identified as having a high likelihood of containing archaeological features through the application of the Fort St. James Forest District Archaeological Predictive Model and/or confirmed by the review of a Registered Professional Archaeologist; or
 - ii. where potential CHR features are identified during site level development activities, or by a First Nation, and a Registered Professional Archaeologist recommends the need for an Archaeological Impact Assessment.
 - g) BCTS field staff and contractors involved in site level planning will be trained in CHR identification by a professional archaeologist (e.g., recognition of above ground CHR features such as Culturally Modified Trees (CMT's) and cultural depressions).
 - h) where site-specific information regarding CHR that is identified to be of Traditional Use and continuing importance, is identified; and the identified CHR has the potential to be affected by planned activities, each of the following will be completed:
 - i. record the location of the Cultural Heritage Resource.
 - ii. evaluate the direct impact of the planned activities on the Cultural Heritage Resource; and
 - iii. modify the planned activities or undertake further assessment (as per subsection g))

- to ensure that the Cultural Heritage Resource is conserved, or if necessary protected.
- i) communicate and seek input from potentially affected First Nations on the completion of site level planning and the outcomes of the assessments and proposed management intent under parts g) and i) of this result or strategy.
 - j) notify the affected First Nation how their input has been considered and that an authorization decision is pending.
6. Where a First Nation has identified road access (authorized by the Timber Sales Manager) as a concern to their continued use of a Traditional Use Site, the Timber Sales Manager will work collaboratively with the First Nation to manage access (limiting or improving).
 7. To facilitate First Nation plant gathering in plant communities associated with second growth plantations, the Timber Sales Manager will not authorize chemical herbicides to control vegetation in plantations or road right-of-ways.
 8. Medicinal plant gathering sites identified by a First Nation as having aboriginal importance, and being rare in abundance, will be documented and managed to conserve the desired plant species. Management strategies related to harvest activities include:
 - a) protection of the site by avoidance, or inclusion within a wildlife tree retention area.
 - b) winter harvesting, to minimize site disturbance.
 - c) selective harvesting.
 - d) avoidance of post-harvest mechanical site preparation.
 - e) restricting road construction within the site, unless road access is required beyond the site and no other practical access option exists.

5.3 Objectives Enabled by Regulations

5.3.1 Scenic Area Designations & Visual Quality Objectives GAR 7(1) & 7(2)

Where the Timber Sales Manager carries out or authorizes timber harvesting or road construction, within the BCTS FDU, within a scenic area pertaining to the *Visual Quality Objective Order* (Ministry of Forests and Range, November 2, 2005), the result or strategy for the objectives for visual quality are:

1. The cutblock or road is designed to be consistent with the applicable established Visual Quality Objectives; and
2. The visually altered forest landscape is consistent with the applicable established Visual Quality Objectives.

5.3.2 General Wildlife Measures GAR 9(2), 9(2), 12(1) and 10(1)

5.3.2.1 Ungulate Winter Range #U-7-003 Mountain Caribou

The Timber Sales Manager will comply with the General Wildlife Measures in the *Order – Ungulate Winter Range #U7-003 Mountain Caribou – Upper Fraser, Hart Ranges and Mount Robson Planning Units* (Ministry of Environment, December 9, 2009).

5.3.2.2 Wildlife Habitat Areas for Caribou 7-016, 7-019 to 7-022, 7-024 to 7-044 and 7-061

The Timber Sales Manager will comply with the General Wildlife Measures in the *Order – Establishing Wildlife Habitat Areas (WHAs) 7-016, 7-019 to 7-022, 7-024 to 7-044 and 7-061 in the Stuart Nechako Forest District* (Ministry of Forests, Lands, Natural Resource Operations and Rural Development, July 21, 2021).

5.3.2.3 Ungulate Winter Range #U-7-0019 Mountain Goat

The Timber Sales Manager will comply with the General Wildlife Measures in the *Order – Ungulate Winter Range #U7-019 Mountain Goat – Fort St. James Forest District* (Ministry of Environment, May 31, 2010).

5.3.2.4 High Elevation Ungulate Winter Range U-7-026 Northern Caribou

The Timber Sales Manager will comply with the General Wildlife Measures in the *Order – Northern Caribou High Elevation Ungulate Winter Range U-7-026 – Fort St. James Forest District (Ministry of Forests, Lands and Natural Resource Operations, May 24, 2016)*.

5.3.2.5 Ungulate Winter Range #U-7-018 and U-7-020 Moose

The Timber Sales Manager will comply with the General Wildlife Measures in the *Order – Moose Ungulate Winter Range U-7-018 and U-7-020 in the Stuart Nechako Forest District (Ministry of Forests, Lands and Natural Resource Operations and Rural Development, March 30, 2022)*.

5.3.2.5.1 Objective – Promote stand heterogeneity by using a diversity of tree species identified in an approved stocking standard.

The Objective under the Order applies to the conditional harvest area UWR units identified in the table below.

UWR TAG	UNIT No.
U-7-018	2, 4, 6, 9 , 11, 13, 15 , 17, 18
U-7-020	4, 10, 12, 14, 16, 18, 19, 20, 21

Where the Timber Sales Manager carries out or authorizes primary forest activities within a conditional harvest area of Moose *UWR U-7-018 and U-7-020* in the BCTS FDU, the results and strategies for the objective to promote stand heterogeneity by using a diversity of tree species identified in an approved stocking standard are:

1. A mixture of preferred and acceptable tree species identified in the approved stocking standards in Appendix 6 will be planted within the Net Area to Reforest (NAR) of each applicable cutblock, except as noted in subsection 4.
2. Further to subsection 1, the total number of well-spaced stems will be consistent with Appendix 6, but the stocking standard targets for preferred well-spaced stems for a particular Zone/Subzone and Site Series will include both the preferred and acceptable tree species identified for the Zone/Subzone and Site Series. Thus, to enhance species diversity in the NAR of cutblocks located within moose conditional harvest areas, the stocking standard preferred species in Appendix 6 (MSSp) shall include both the listed preferred and acceptable species.
3. No more than 60% of any single tree species will be planted within the NAR of each applicable cutblock, except as noted in subsection 4.
4. In those site-specific instances where forest health pathogens present on the site (as supported by survey information) restrict the ecologically suitable species that can be planted within the NAR:
 - a) a written rationale will document the limiting forest health criteria and steps taken to promote species diversity and maintain or enhance moose habitat.
5. Where healthy contiguous and mappable deciduous types more than two (2) hectares in size are identified (through silviculture surveys) in the NAR and found to be out-competing target coniferous stems, their area and location will be delineated. An exemption from the requirement to achieve a Free-Growing stand will be sought for the area comprising these deciduous types. If approved the area will be removed from the NAR for the purpose of enhancing moose habitat.

5.3.3 Fisheries Sensitive Watersheds GAR 14(1) and 14(2)

The Order – Fisheries Sensitive Watershed Fort St. James Forest District was issued March 12, 2018, under the authority of sections 14(1) and 14(2) of the Government Actions Regulation (GAR) (B.C. Reg. 582/2004) and established fisheries sensitive watersheds pertinent to the FDU. The Fisheries Sensitive Watersheds applicable to the FDU are:

- a) F-7-006 (Gluskie Creek, Units # 1 and 2).
- b) F-7-010 (Bivouac Creek, Units # 1 and 2).
- c) F-7-007 (Forfac Creek, Units # 1 and 2).
- d) F-7-008 (Kynoch Creek, Units # 1 and 2).
- e) F-7-011 (Van Decar Creek, Units # 1 and 2).
- f) F-7-012 (Sidney Creek, Unit # 3).
- g) F-7-013 (Paula Creek, Units # 3).

Definitions – as specified in the order “Fisheries Sensitive Watershed Fort St. James Forest District”. The definitions in the order take precedence in the event of any discrepancies.

“access structure” - (i) temporary or permanent; (ii) active or deactivated. They include, but are not necessarily limited to, roads, the road prism, and stream crossings as defined or described under the FRPA.

“active road” - a Forest Service Road or other form of permitted Forest Act Road tenure that has not been deactivated.

“connected” - the capacity for water-mediated transport of debris (mineral soils and organic materials) from an upstream location to downstream areas.

“coupled” - the upslope linkage between a sediment/debris source and a stream channel. Coupled slopes are those where sediment from landslides or other mass wasting processes can directly enter the stream channel; partially coupled slopes are those where only a portion of the sediment generated enters the stream channel; and decoupled slopes are those where none of the sediment reaches the stream channel because it settles along the valley bottom.

“equivalent clearcut area (ECA)” - is a disturbance-based indicator that identifies the proportion of a watershed, or specified sub-units, that has an equivalent hydrological response as a clearcut. Disturbance-based equivalency factors are assigned to forested areas that have been harvested (with consideration given to the silvicultural system & regeneration growth), cleared (anthropomorphic such as roads, private land, gravel pits, mines, railway, pipelines, utility corridors, etc.), burned (wildfire or prescribed), and/or impacted by insect infestations.

“gentle-over-steep” - a type of terrain feature comprising of both (1) steep or potentially unstable slopes that are (2) located immediately down-slope of gentle terrain where forest development can potentially occur.

“old growth” - for the purpose of quantitative analysis for Objective 2, old growth is defined as interior forest dominated by lodgepole pine or deciduous species more than 120 years old and all other interior forest more than 140 years old.

“road” - for the purposes of Objective 6, road refers to all roads of any type.

“riparian area” - For the purposes of Objective 2, riparian area refers to the management area for the entire length of the stream, measured from each stream bank to a distance 15m upslope from each streambank on:

1. S4 streams that are 0.5m or greater in stream channel width, or
2. S6 streams that are 0.5m or greater in stream channel width that flow directly into a fish stream.

“sediment production” - a source of sediment that is generated by unstable terrain, a road right-of-way, road or roadway stream crossing, and associated features and that has the potential to enter a stream.

“stream channel width” - the horizontal distance between the streambanks on opposite sides of the stream measured at right angles to the general orientation of the banks.

“streambank” - The point on each stream's bank from which stream channel width (or bank height) is measured is

usually indicated by a definite change in vegetation and sediment texture. This border is the "normal" high-water mark of the stream and is sometimes shown by the edges of rooted terrestrial vegetation. Above this border, the soils and terrestrial plants appear undisturbed by recent stream erosion. Below this border, the banks typically show signs of both scouring and sediment deposition.

"undisturbed" - for the purpose of quantitative analysis for Objective 2, an undisturbed riparian area is: (i) undisturbed by primary forest activities or (ii) has recovered from a disturbance pre-dating the Order and now meets the old growth definition.

Definitions - pertinent to FSP Results and Strategies related to Fisheries Sensitive Watershed Objectives.

"Qualified Person" - A qualified person is one who possesses the specified knowledge, skills, training, experience, and other requirements to perform a specified type of work as:

- set out in legislation, set out in government policy, or required by an organization satisfactory to government that has the responsibility for specifying the requirements.

The requirements include holding an accreditation bestowed by:

- government, a professional association constituted under an Act, or other organization satisfactory to government.

Attainment of the requirements is either

- verified through a process undertaken by government, a professional association or other organization satisfactory to government, to confirm that all requirements are met, or
- self-assessed by members of a professional association constituted under an Act, where a code of ethics requires members to operate only within their area of expertise.

"Road Rehabilitation" – refers to rehabilitating the area occupied by that road by (a) decompacting compacted soils, (b) returning displaced surface soils, retrievable side-cast and berm materials onto the area occupied by that road, and either (c) placing woody debris on the exposed soils, or (d) revegetating the exposed mineral soils.

"Stream" (as per the FPPR) – means a watercourse, including a watercourse that is obscured by overhanging or bridging vegetation or soil mats, that contains water on a perennial or seasonal basis, is scoured by water or contains observable deposits of mineral alluvium, and that

- (a) has a continuous channel bed that is 100 m or more in length, or
- (b) flows directly into
 - (i) a fish stream or a fish-bearing lake or wetland, or
 - (ii) a licensed waterworks

"Reach" (as per the Forest Practices Code (FPC) Fish-stream Identification Guidebook, 1998) - means a watercourse that has a continuous channel bed that meets one of the following requirements:

- A. the channel bed is at least 100 m in length, measured from any of the following locations to the next of any of the following locations:
 - i) the location where the watercourse begins or ceases to have a continuous channel bed;
 - ii) the location where
 - a) a significant change in morphology occurs, for example at the junction of a major tributary, and
 - b) the mean width of the channel bed, as measured over a representative 100 m length of channel bed, upstream and downstream of the morphological change is sufficient to change the riparian class of the watercourse, if the watercourse were a stream;
 - iii) the location where
 - a) a significant change in morphology occurs, for example at the junction of a major tributary, and
 - b) the mean gradient of the channel bed, as measured over a representative 100 m length of channel bed upstream and downstream the morphological change, changes from less than 20% to 20% or more, or vice versa;
- B. the channel bed is at least 100 m in length, made up of one or more segments, the boundaries of which are any of the locations referred to in paragraph A;
- C. the channel bed is less than 100 m in length, if the continuous channel bed
 - i) is known to contain fish,
 - ii) flows directly into a fish stream or a lake that is known to contain fish, or
 - iii) flows directly into a domestic water intake.

“Unstable slopes” – areas with a moderate to high likelihood of landslide initiation following harvesting or road construction.

“Terrain Stability Assessment (TSA)” - An assessment of landslide hazard, a landslide hazard analysis, or a landslide risk analysis for terrain on or adjacent to a forest development which may be carried out. A TSA may include options or recommendations to manage hazard or risk.

“Terrain Stability Class IV” – means a terrain stability mapped area (polygon) expected to contain areas with a moderate likelihood of landslide initiation following timber harvesting or road construction.

“Terrain Stability Class V” - means a terrain stability mapped area (polygon) expected to contain areas with a high likelihood of landslide initiation following timber harvesting or road construction.

“Erosion and Sediment Control Plan” - is a plan that details temporary measures (may include permanent measures) that will be implemented to minimize soil erosion of the disturbed sites and limit the transport of sediment from these sites where there is direct or indirect connectivity to water.

“Access Erosion and Sediment Control Checklist” - means a checklist oriented by road development phase (e.g., planning, field layout, construction, maintenance, and deactivation) with associated best management practices identified to reduce erosion and sedimentation risk. Its purpose is to ensure best management practices to reduce soil erosion and sedimentation are considered and tracked accordingly through the various road development phases.

“Risk” – is a measure of the probability of a specific event occurring and the consequence, or adverse effects of that event on specific elements of value, such as water quality and fish habitat. Risk is the product of hazard and consequence.

“Hazard” – Potentially damaging events, action or substance that has a potential to create an adverse effect.

“Consequence” – is the likelihood of damage or losses to an element-at-risk in the event of a specific hazard. Consequence can also include the value of losses or damage to the elements.

“Gross Cutblock” – means the total area of the cutblock, which includes all roads, the net area to be reforested, internal reserves and any non-productive areas.

The definitions for “Fine Sediment” and “Below Moderate Rating” are taken from the Forest and Range Evaluation Program (FREP), Water Quality Effectiveness Evaluation (WQEE, 2018) protocol document.

Fine Sediment – Includes fine sand, silt, and clay particles of a particle size less than one (1) millimeter.

Below Moderate Rating - A rating of the sediment generation potential at a site assessed using the FREP WQEE assessment protocol which reflects a sediment generation potential less than or equal to 1.0 m³.

5.3.3.1 Objective – Do not exceed an equivalent clearcut area (ECA) of the stated amount (%) for the combined areas of the Units for the FSW, as listed below.

Fisheries Sensitive Watershed	Unit #	Maximum ECA Limits (%)
F-7-006 (Gluskie Creek)	1, 2	25
F-7-007 (Forfac Creek)	1, 2	25
F-7-008 (Kynoch Creek)	1, 2	25
F-7-010 (Bivouac Creek)	1, 2	30
F-7-011 (Van Decar Creek)	1, 2	19
F-7-012 (Sidney Creek)	1, 2, 3	17
F-7-013 (Paula Creek)	1, 2, 3	17

Where the Timber Sales Manager carries out or authorizes primary forest activities within Fisheries Sensitive Watersheds in the BCTS FDU, the results and strategies for the objective of not exceeding maximum equivalent clearcut area thresholds are:

1. Prior to the Timber Sales Manager authorizing or carrying out the removal of timber within the Fisheries Sensitive Watersheds identified above, the current equivalent clearcut area (ECA) percent will be calculated for the watershed to which the proposed primary forest activities apply.
2. A qualified person will calculate the ECA percent in subsection 1, using the best available science on hydrological recovery and disturbance-based equivalency factors for disturbed forest stands.

3. The results of the ECA percent in subsection 1 and 2 will be shared with appropriate government staff to ensure consistent methodology.
4. The Timber Sales Manager will not issue Timber Sale Licences, Road Permits, or construct Forest Service Roads where the ECA percent at the time of issuance exceeds the maximum ECA limits specified in the order.

5.3.3.2 Objective - Maintain old growth attributes and long-term woody debris (LWD) recruitment to the stream channel by retaining at least 90% of the riparian area in a state undisturbed by primary forest activities. Up to 10% of the riparian area can be in a state disturbed only by access structures.

Where the Timber Sales Manager carries out or authorizes primary forest activities within Fisheries Sensitive Watersheds in the BCTS FDU, the results and strategies for the objective to maintain old growth attributes and long-term woody debris recruitment to the stream channel are:

1. Stream classification, including stream channel measurement will be determined by a qualified person using a methodology consistent with the Forest Practices Code Fish-Stream Identification Guidebook, Version 2.1, August 1998.
2. The riparian area (as defined in the order) pertinent to a stream reach classified as per i) and ii) below, will be excluded from primary forest activities, except as in subsection 3.
 - i) an S4 stream with a stream channel width 0.5m or greater, or
 - ii) an S6 stream with a stream channel width 0.5m or greater which flows directly into a fish-stream.
3. Up to 10% of the riparian area (as defined in the order) pertinent to a stream reach referred to in subsection 2 may be disturbed, but only for the purpose of facilitating a stream crossing.
4. For the purpose of subsection 3, the percentage of riparian area (as defined in the order) disturbed by stream crossings will be calculated as follows:
 - i) Where stream crossings on stream reaches meeting the definition of subsection 2 are proposed (e.g., designated skid crossings, block roads, road permits and Forest Service Roads) the stream reaches will be assessed over the entire length of the stream to determine the total riparian area.
 - ii) The riparian area potentially disturbed by a proposed stream crossing plus any existing disturbed riparian area as result of primary forest activities over the stream reach length referred to in subsection 2 will comprise the riparian disturbance area in that situation.

For example, for a newly proposed cutblock and access road in an FSW.

- Two (2) block road stream crossings are proposed on an S4 stream. The field assessed length of the S4 stream reach meeting the definition in subsection 2.i) is 1200m. Thus, the total stream riparian area under assessment is 36,000 m² (1200m length X 30m riparian area (15m either side)).
- An addition (1) stream crossing is proposed on the stream reach to facilitate road access to the block.
- The total stream crossing disturbance = 2,700 m² (assuming a 30m right-of-way disturbed area is associated with each crossing of the 30m wide riparian area (3x30mx30m)).
- Therefore the % of riparian area disturbed = 7.5 % (2,700/36,000). Consistent with subsection 3.
- If there was an existing 40-metre-wide crossing (1200 m² disturbed area) on the S4 stream reach. The % of riparian area disturbed = 10.8% ((2,700 m²+1,200m²)/36,000m² x100). Inconsistent with subsection 3.

5.3.3.3 Objective - Manage fine sediment production at all active road crossings on fish streams, direct tributaries to fish streams and active roads that are connected to fish streams such that sediment production is kept below a Moderate Rating.

Where the Timber Sales Manager carries out or authorizes primary forest activities within Fisheries Sensitive Watersheds in the BCTS FDU, the results or strategies for the objective of managing fine sediment production to a below moderate rating at all active road crossings associated with, fish streams, direct tributaries to fish streams and active roads that are connected to fish streams are:

1. A Water Quality Effectiveness Evaluation (WQEE), as per the Forest and Range Evaluation (FREP) Protocol, will be completed by a qualified person within one (1) year of the effective date of this FSP, at all active road crossings on fish streams, direct tributaries to fish streams and active road segments that are connected to fish streams for the purpose of monitoring the potential for fine sediment production.
2. Where the results of the WQEE in subsection 1 indicate the potential for fine sediment production rates at or above a moderate rating, the following immediate actions will be taken:
 - i) A follow-up WQEE will be conducted to confirm results.
 - ii) Sediment production sources and their connectivity to fish-streams or direct tributaries (as identified in the WQEE) will be reviewed on-site to assess possible solutions to reduce potential sedimentation production (e.g., road surface, road cutbanks, road ditches, grader berms, fill slopes or sidecast, gullies or rills generated by storm flow, landslides or other disturbed areas).

- iii) Erosion and sediment control practices will be implemented as determined in subsection ii) or as recommended by a qualified person to reduce potential sediment production rates to a below moderate rating (i.e., $\leq 1.0 \text{ m}^3$ sediment potential).
 - iv) Follow-up WQEE's will be scheduled and completed at a frequency recommended by a qualified person based on the results of subsections ii) and iii).
3. An Access Erosion and Sediment Control Checklist will be implemented for all new roads authorized or constructed by the Timber Sales Manager to ensure best management practices are considered and prescribed.
 4. A site-specific Erosion and Sediment Control Plan will be created and implemented (during construction, maintenance, and deactivation activities) at all new active road crossings on fish-streams, direct tributaries to fish streams and on active roads that are connected to fish streams.
 5. Active road crossings (new and existing) on fish streams, direct tributaries to fish streams and active roads connected to fish-streams authorized or constructed by the Timber Sales Manager will be monitored, as per subsection 2 iv) until permanent deactivation is complete.
 6. Wet Weather Road Use Guidance will be implemented within three (3) months of the effective date of this FSP to minimize fine sediment deposition in fish-streams as result of industrial road-use during wet weather.

5.3.3.4 Objective - Maintain fish habitat and fish movement by ensuring that active roads crossing fish-streams will be constructed, replaced, and deactivated so that they preserve or replicate throughout the stream channel at the crossing:

- a. the pre-crossing stream channel width, and
- b. the natural roughness of the stream channel bed.

Where the Timber Sales Manager carries out or authorizes primary forest activities within Fisheries Sensitive Watersheds in the BCTS FDU, the results or strategies for the objective of constructing, replacing and deactivating fish-stream crossings to maintain fish habitat and fish movement are:

1. A qualified person with adequate training and knowledge of fish, fish habitat and species at risk will conduct a stream channel habitat evaluation where fish-stream crossings will be constructed or replaced.
2. A site-specific Erosion and Sediment Control Plan will be created and implemented (during construction, replacement, and deactivation activities) at active fish-stream road crossings.
3. The clearing width at new fish-stream crossing sites will be narrowed to the extent practicable considering operational and safety requirements (e.g., riparian vegetation is to be left adjacent to a greater length of the stream than if the normal road clearing width was maintained through the crossing location).
4. Streamside vegetation within fish-stream crossing right-of-ways will be retained to the extent operationally feasible (e.g., depending on the road class and required sight-lines for safety, the type and amount of riparian vegetation remaining will vary). Areas of exposed soil will be re-vegetated, and the crossing site stabilized to prevent post-construction, replacement, or deactivation soil erosion.
5. Open-bottom structures will be designed by a qualified person and installed within the appropriate fisheries timing window at all new fish-stream crossings to avoid:
 - i) impacts to fish, fish passage and in-stream fish habitat.
 - ii) encroaching on the stream channel width.
 - iii) causing excessive loss of riparian vegetation; or
 - iv) affecting a Species at Risk Act (SARA) listed species, its residence, or critical habitat.
6. A qualified person will ensure that fish-stream crossings are constructed to design specifications and replaced and deactivated in a manner consistent with subsection 5.
7. A Water Quality Effectiveness Evaluation (WQEE), as per the Forest and Range Evaluation (FREP) Protocol, will be completed by a qualified person at all new, replaced, or freshly deactivated fish-stream road crossings. The subsequent inspection frequency will be determined by the qualified person based on the results of the evaluation.
8. If impacts to fish, fish passage and in-stream fish habitat are identified and relate to fish-stream crossings authorized, constructed, replaced, or deactivated by the Timber Sales Manager, immediate mitigative measures (as recommended by a qualified person) will be implemented.

5.3.3.5 Objective - Within Unit 1 of each FSW, do not conduct timber harvesting.

Where the Timber Sales Manager carries out or authorizes primary forest activities within Fisheries Sensitive Watersheds in the BCTS FDU, the results or strategies for the objective pertaining to Unit 1 of each Fisheries Sensitive Watershed are:

1. The Timber Sales Manager will not authorize or carry out timber harvesting within Unit 1 of each Fisheries Sensitive Watershed, except for the purpose of constructing new access structures to access timber beyond Unit 1 under the strategies within the subsection 5.3.3.6 objective below.

5.3.3.6 Objective - Within Unit 1 of each FSW, do not construct new access structures except where it can be documented that no other practicable option exists to access timber beyond Unit 1 and a new access structure is required.

Where the Timber Sales Manager carries out or authorizes primary forest activities within Fisheries Sensitive Watersheds (FSWs) in the BCTS FDU, the results or strategies for the objective not to construct new access within Unit 1 of each FSW, unless there is no other practicable option to access timber beyond are:

1. The Timber Sales Manager will not issue Road Permits for the construction of new road access, or construct Forest Services Roads within Unit 1, unless there is no other practicable option to access timber beyond, as supported by a written rationale (as per subsection 2).
2. The written rationale must include an assessment by a qualified person that demonstrates:
 - i) there is no safe or environmentally acceptable alternative road location.
 - ii) the road location, design and specifications for any related stream crossings are field verified by a qualified person familiar with hydrological and geomorphic hazards on fans.
 - iii) the existing and incremental risks to the watershed as result of the proposed access road.
 - iv) depending on subsection iii, risk control and mitigative measures to reduce the hazards and/or reduce the consequences of the proposed road access.
 - v) the planned duration of safe road use (within unit 1) is scheduled according to the earliest date the minimum number of preferred and acceptable well-spaced trees per hectare (as per Appendix 6) can be met within the harvest area(s), tributary to the access road and the road is deactivated within the following year.
3. A qualified person confirms the road is constructed according to plan, including the installation of drainage structures and deactivation activities related to the road and removal of any drainage structures.
4. A monitoring plan including inspection frequency will be created by a qualified person based on the hydrological and geomorphic hazards present, water quality effectiveness monitoring and material change in the watershed condition due to natural events. Subsequent implementation of mitigative measures will proceed as per the plan.

5.3.3.7 Objective - Minimize road density on unstable slopes that are coupled to fish-bearing streams as well as their directly connected non-fish bearing tributaries such that they achieve a low hazard rating.

Where the Timber Sales Manager carries out or authorizes primary forest activities within Fisheries Sensitive Watersheds (FSWs) in the BCTS FDU, the results or strategies for the objective to minimize road density on unstable slopes that are coupled to fish-bearing streams or their connected tributaries to achieve a low hazard rating are:

1. Unstable slopes will be identified at the pre-planning stage by means of:
 - i) terrain stability class IV and V polygons identified by a qualified person through terrain stability mapping (if available).
 - ii) existing or past indicators of slope instability (e.g., bare slopes areas (no vegetation), irregular slope surfaces indicating soil movement (slumps, scarps etc.), tension cracks and bent or bowed trees).
 - iii) as a default, areas identified through LiDAR data with slopes greater than 50% (consistent with moderately steep to steep slopes, as per 5.3.3.8 1ii)).
2. Road access on unstable slopes will be avoided unless there is no other safe or environmentally acceptable alternative to access or facilitate the harvest of pertinent timber.
3. Where road access is proposed on unstable slopes, a Terrain Stability Assessment will be completed by a qualified person for the purpose of:
 - i) assessing the terrain conditions along the proposed road corridor (or connected areas) or comparing alternative routes.

- ii) evaluating the landslide hazards that could affect the road and the potential terrain response to road construction.
 - iii) assessing the potential risk to fish and fish habitat posed by the road.
 - iv) making site-specific recommendations or providing options for road design or risk management for road construction, maintenance, deactivation, or reactivation activities.
4. The Timber Sales Manager will not authorize, construct, or reactivate roads on unstable slopes that are coupled to fish-bearing streams or their directly connected non-fish bearing tributaries where the road density is 0.15 km/km² or greater. A road density of less than 0.15 km/km² on unstable slopes is considered to fall within a low hazard category (*Forest Practices Code (FPC) 1995, Interior Watershed Assessment Procedure Guidebook*).
 5. Roads constructed, maintained, deactivated, or reactivated on unstable slopes will adhere to the recommendations provided through subsection 3 iv, and any related geotechnical design recommendations provided by a qualified person (i.e., an engineering specialist).
 6. Roads constructed on unstable slopes are to be considered temporary in nature, planned for the shortest period of active use (in consideration of safety) and the road rehabilitated upon completion of pertinent primary silviculture activities (i.e., tree planting).
 7. A monitoring plan including inspection frequency and implementation of mitigative measures (including timelines) will be determined by a qualified person based on the geomorphic and hydrologic hazards present, water quality effectiveness monitoring and material change in the watershed condition due to natural events. Subsequent implementation of mitigative measures will proceed as per the plan.

5.3.3.8 Objective - Plan primary forest activities on gentle-over-steep terrain that is coupled to fish-bearing streams as well as their directly connected non-fish bearing tributaries to avoid destabilization that may result in landslides or other mass wasting events.

Where the Timber Sales Manager carries out or authorizes primary forest activities within Fisheries Sensitive Watersheds (FSWs) in the BCTS FDU, the results or strategies for the objective to plan primary forest activities on gentle-over-steep terrain coupled to fish-bearing streams or their directly connected tributaries to avoid destabilization that may result mass wasting events are:

1. A qualified person will identify if the proposed harvest area or access road is on gentle terrain (< 50%) with steep (≥ 50%), or potentially unstable terrain present within 300m downslope of the development activity (this includes downslope steeply incised gullies and streams).
 - i) gentle slopes (6 – 26%) and moderate slopes (27 – 49%) comprise gentle terrain.
 - ii) moderately steep slopes (50 – 70%) and steep slopes (>70%) comprise steep terrain.
 - iii) A LiDAR derived digital elevation model will be used to assess the harvest or road location in respect to the proximity of downslope steep terrain.
 - iv) potentially unstable terrain includes existing or past indicators of slope instability (e.g., bare slope areas (no vegetation), irregular slope surfaces indicating soil movement (slumps, scarps etc.), tension cracks and bent or bowed trees).
2. Where the harvest area or access road is proposed on gentle-over-steep terrain, the existing natural drainage pattern 100m upslope and 300m downslope of the proposed development will be identified. LiDAR terrain data with subsequent on-site confirmation of watercourse classification and location (including ephemeral streams, seepage areas, or drainage pathways) by a qualified person will be used to map the hillslope drainage pattern. The hillslope drainage assessment area is consistent with research into gentle over steep landslide occurrence in the southern interior (*Grainger, B., 2004 Terrain Stability Field Assessments in "Gentle over Steep" Terrain of the Southern Interior of British Columbia*).
3. Where the harvest area or access road is proposed in gentle-over-steep terrain, a Terrain Stability Assessment will be completed by a qualified person for the purpose of:
 - i) assessing the downslope steep terrain stability (as per subsection 1.) and the transition area (break-in-slope) between the gentle and steep terrain located within 300m downslope of the proposed road or harvest area.
 - ii) assessing in consideration of subsection 2: the hillslope moisture regime (including upslope landscape condition), how roads may intercept runoff, concentrate, and redirect water, the soils drainage connectivity, presence and depth of any impermeable layer, the presence of downslope swales, gullies, or steeply incised streams as drainage sources to concentrate flow.
 - iii) making site-specific recommendations: to limit hillslope drainage interception, concentration, and redirection; for road design, layout, and drainage structures to reduce downslope landslide hazard;

and other management strategies pertinent to reducing the landslide risk in respect of the proposed harvesting, road construction, maintenance, deactivation, or reactivation activities.

4. Harvesting, road construction, maintenance, deactivation, or reactivation authorized or carried out by the Timber Sales Manager on gentle-over-steep terrain will be consistent with the recommendations provided through subsection 3, and any related geotechnical design recommendations provided by a qualified person (e.g., an engineering specialist).
5. A qualified person will create a monitoring plan including inspection frequency and implementation of mitigative measures (including timelines) based on the hazards identified in subsection 3, water quality effectiveness evaluation monitoring and material change in the watershed condition due to natural events. Subsequent implementation of mitigative measures will proceed as per the plan.

5.4 Grand parented Designations and Objectives FRPA 180-181

5.4.1 Mule Deer Designations and Objectives FRPA 180-181

Where the Timber Sales Manager carries out or authorizes primary forest activities, within the BCTS FDU, within a mule deer ungulate winter range polygon as specified in the *Order – Ungulate Winter Range # U7-002* (Ministry of Water Land and Air Protection, June 19, 2003), the results or strategies for the objective for mule deer that is set out in the Order as grand parented under FRPA section 181 are:

1. Cutblocks and roads are designed to achieve the management objectives specified in the Order; and
2. Primary forest activities will comply with the management objectives specified in the Order.

5.4.2 Recreation Designations and Objectives FRPA 180-181

Where the Timber Sales Manager carries out or authorizes primary forest activities, within the BCTS FDU, within or immediately adjacent to an established recreation site, recreation trail or interpretive forest site, the result or strategy for the objective for recreation specified in the *Order to Establish Objectives for a Recreation Site, Recreation Trail or Interpretive Forest Site* (Ministry of Forests, January 2, 2001) as grand parented under FRPA section 181 are:

1. Primary forestry activities are not permitted within the boundary of an established recreation site, recreation trail or interpretive forest site, unless authorized under *section 16 of the Forest Recreation Regulation*.
2. Primary forest activities within 200 meters of the boundary of an established recreation site, recreation trail or interpretive forest site will be designed and implemented to minimize negative impacts to the desired recreational experience specified in the order, with the exception:
 - a) road construction activities are not permitted within 300 meters of an established recreation site, or trail boundary managed for a semi-primitive, non-motorized recreation experience unless:
 - i. a deactivated road is being re-activated, or required maintenance works completed, or
 - ii. the road is required to access areas beyond the site or trail and there is no other practicable option that would result in less environmental impact.

5.4.3 Lakeshore Classification: Fort St. James District FRPA 180

Where the Timber Sales Manager carries out or authorizes primary forest activities within the BCTS FDU, the result or strategy for the lakeshore classification designations made known under *section 64 of Operational Planning Regulation* (August 11, 2000) as grand-parented under FRPA section 180 are:

1. The grand-parented lake class designations have been incorporated into section 49 of the FPPR and are reflected as a lake subclass in Table 1 of *subparagraph 5.2.3.1*. The lake riparian class and associated riparian management areas, riparian reserve zones and riparian management zones are consistent with the Fort St. James lakeshore classification designations.

6.0 MEASURES

6.1 Measures for Preventing the Introduction or Spread of Invasive Plants FPPR 17

Where the Timber Sales Manager carries out or authorizes primary forest activities within the BCTS FDU, the measures for the purposes of FRPA section 47 are:

1. Identify known locations of invasive plant species within the FDU, as indicated in provincial inventories (the Invasive Alien Plant Program – IAPP).
2. On an annual basis, identify regional priority invasive plant species (through discussion with the regional invasive plant committee(s) and MOF invasive plant specialists).
3. Priority invasive plant species identification training will be provided to field staff and contractors at minimum every two years.
4. New invasive plant sites identified will be reported to the local MOF invasive plant specialist or reported through the provincial IAPP – map display and reporting tool.
5. For the purpose of subsections 6, 7 and 8, Table 3: Invasive Plant Site Risk described below defines the risk rating of areas where the spread of invasive plants poses an extremely high, high or moderate risk.

Table 3: Invasive Plant Risk

Risk Rating	Site Conditions
Extremely High	Areas of Disturbed Soils 0.25 hectares or greater, which are located within 5 km of highly susceptible areas, such as seed or other high-value agricultural crops (including private land).
High	Areas of Disturbed Soils 0.5 hectares or greater, which are located within 5 km of a site identified as containing extremely, or very invasive plants, as described by the Northwest Invasive Plant Committee
Moderate	Areas of Disturbed Soils 0.5 hectares or greater, which are located within 5 km of a site identified as containing invasive, or aggressive invasive plants, as described by the Northwest Invasive Plant Committee

Table 4: Invasiveness Classifications

Invasiveness Classifications	
Extremely Invasive	Invade even undisturbed habitats and dominate them. Domination implies the invasive plant becomes the most abundant species across the entire site or area of the plant community being invaded. The invasion can progress slowly or rapidly.
Very Invasive	Invade even undisturbed habitats. They become very prevalent and may form dense patches but usually do not dominate the entire site or area of the plant community.
Invasive	Can invade undisturbed habitats but they usually require some disturbance to gain entry. Once in a habitat they usually do not dominate the site unless there are management problems.
Aggressive	Can invade even undisturbed habitats but they do so at a slow pace and rarely dominate the site. These plants may go through large population fluctuations.

Note: - Invasiveness Classifications are sourced from the NWIPC 2015 Strategic Plan.
Extremely Invasive being the most aggressive and invasive.

6. In areas where the spread of invasive plants poses an extremely high risk, the TSM will seed areas of disturbed soils with grass and legumes (using Common #1 Forage Mixture or better) within 6 months of completing primary forest activities.
7. In areas where the spread of invasive plants poses a high risk, the TSM will seed areas of disturbed soils with grass and legumes (using Common #1 Forage Mixture or better) within 1 year of completing primary forest activities.

8. In areas where the spread of invasive plants poses a moderate risk, the TSM will seed areas of disturbed soils with grass and legumes (using Common #1 Forage Mixture or better) within 2 years of completing primary forest activities.
9. Subsections 6, 7 and 8 above pertain to areas of disturbed soils:
 - a) resulting from forest practices carried out or authorized by the TSM.
 - b) not reforested; and
 - c) within the road clearing width that will support vegetation.
10. For the purpose of subsection 9 c), the TSM will undertake seeding associated with the road clearing width on areas of disturbed soils that will support vegetation. This includes road cuts, ditchlines, fill slopes, inactive borrow pits, disposal sites for debris and disposal sites for excavation spoil. It excludes the running surface of active roads, exposed rock or other areas where seed will not successfully germinate.
11. Sites referred to in subsections 6 and 7 of this commitment will be monitored over the year following seeding to ensure they are adequately vegetated (to prevent the introduction or spread of invasive plants). Sites not adequately vegetated, or disturbed by other harvesting activities carried out, or authorized by the TSM, will be re-seeded (using Common #1 Forage Mixture or better) within one year of site inspection and further monitored as required to ensure establishment of grass seed.
12. Soil or surfacing material (used during road construction) will not be transported from a known invasive plant site (as identified through the Invasive Alien Plant Program – IAPP).

6.2 Measures to Mitigate the Loss of Natural Range Barriers FPPR 18

If the Timber Sales Manager carries out or authorizes primary forest activities, within the BCTS FDU, the measures for the purposes of FRPA section 48 are:

1. Each year identify areas within the FDU that are subject to, or adjacent to agreements under the *Range Act* in respect of grazing of livestock, using information gathered from MOF spatial data layers, district range staff, or regional experts.
2. After completion of subsection 1, identify the range tenure areas in which the proposed development activities are located.
3. Share information regarding the proposed primary forest activities (sufficient to enable input in subsection 4) with any potentially affected range tenure holder.
4. Solicit input from the range tenure holder as to whether any natural range barriers may be rendered ineffective by the proposed development activities.
5. Where a range tenure holder demonstrates that planned primary forest activities will render a natural range barrier ineffective, the Timber Sales Manager will implement procedures to mitigate the effects of proposed activities by:
 - a) discussing potential impacts and mitigation options with the range tenure holder(s) and agree upon a mitigation plan (including timelines for implementation and follow-up evaluations), or
 - b) modifying the planned primary forest activities.
 - c) implementing the mitigation plan (as per subsection a)), which may include the installation of an artificial range barrier to replace the natural range barrier rendered ineffective by the proposed primary forest activities.

7.0 STOCKING STANDARDS

1. Section 44(1) of the FPPR applies in all situations or circumstances under this FSP where a free growing stand is required to be established under FRPA section 29.
2. Appendix 6 specifies the regeneration date, free growing height and stocking standards for the situations or circumstances where FPPR section 44 (1) (a) and (b) apply. The dominant site series will be used to establish the stocking standards for those standard units with a complex site series.

3. Section 44(4) does not apply to this FSP, as the Timber Sales Manager will not carry out or authorize:
 - a) commercial thinning, removal of individual trees, or similar type of intermediate cutting; and
 - b) harvesting of special forest products.
4. Douglas fir Management Strategy - Where Douglas fir (Fdi) grows on a site or is ecologically suitable for a site it will be an acceptable species. Douglas-fir may not be listed in a specific stocking standard in the Chief Forester's Stocking Standards, however if it is present in the stand before harvesting or has the potential to grow with acceptable health and vigor, then it will be considered an acceptable species on that site. The addition of Fdi to these sites allows for increased species diversity which will help mitigate the effects of climate change, increase biodiversity and aid in plantation health. The definition of a suitable site for Fdi within this FSP will be if the site rates as having a high or very high Douglas Fir site potential as defined by the table on page 10 of the Douglas-fir management Guidelines for the Prince George Forest Region December 1999.
5. The minimum inter-tree distance (MITD) to define well-spaced trees is 2.0 meters, except in the following circumstances:
 - i) on subhygric, hygric and/or subhydryic site series standards units, the MITD will be 1.6 meters.
6. For the purpose of preferred microsite selection during artificial regeneration and crop tree selection during silviculture surveys, where the MITD is normally 2.0 meters for a pair of well-spaced crop trees, it may be reduced to 1.6 meters if the next acceptable, well-spaced crop tree is a minimum of 2.5 meters from either crop tree in the pair.
7. To be free growing, trees must be at least 125% of the height of brush in ESSF and 150% of the height of brush in all other zones.
8. In Riparian Management Areas and Wildland Interface Areas adjacent to private land, aspen, cottonwood, birch, willow and alder, within 20 meters of the riparian feature or private land boundary, will not be considered vegetative competition when conducting a free growing assessment.
9. In respect of Agricultural Development Areas (as defined in section 5.1.1) and Gravel Pit Reserves, the land-use intent is incompatible with the establishment of a free-growing stand, thus no stocking standards will be assigned.
10. Within the net area to reforest, non-brushed buffers up to 20 meters in width may be left adjacent to block boundaries as per subsections i), ii) and iii) in effort to retain preferred moose browse species not in conflict with Caribou management. The brush and deciduous species within these buffers will not be considered competition when conducting a free-growing assessment.
 - i) adjacent main or secondary roads to assist in providing security cover (line of sight) from hunters and predators.
 - ii) adjacent a cutblock NAR boundary, within 300m of standing timber edge (age class 4 or greater) to enhance available browse.
 - iii) as per section 5.3.2.5 *General Wildlife Measures in the Order – Moose Ungulate Winter Range U-7-018 and U-7-020 in the Stuart Nechako Forest District.*

Preferred moose browse means any or all of the following: trembling aspen (*Populus tremuloides*), black cottonwood (*Populus balsamifera* spp. *trichocarpa*) less than or equal to 3 metres in height, paper birch (*Betula papyrifera*) less than or equal to 3 metres in height, douglas-fir (*Pseudotsuga menziesii* var. *glauca*), subalpine fir (*Abies lasiocarpa*), red-osier dogwood (*Cornus stolonifera*), high-bush cranberry (*Viburnum edule*), willow (*Salix* sp.), black twinberry (*Lonicera involunrata*), saskatoon (*Amelanchier alnifolia*), beaked hazelnut (*Corylus cornuta*), elderberry (*Sambucus racemosa*), mountain ash (*Sorbus* sp.), raspberry (*Rubus* sp.), current (*Ribes* sp.), rose (*Rosa* sp.), and Douglas maple (*Acer glabrum* var. *douglasii*).

11. Stocking Standard Variances:

- a) Standards Id's **1052469, 1052470, 1052480, 1052482, 1052484, 1052501, 1052502, 1052505, 1052511, 1052512, 1052514, 1052520, 1052523, 1052524** – In those circumstances where the presence of healthy, immature Fdi stems, mature Fdi stems or Fdi-related mycorrhizae exists on the pre-harvest site, or it is ecologically suited (as defined in subsection section 7 (5)) to the site, Fdi will be considered an acceptable species.

- b) Standard Id's **1052458, 1052459, 1052460, 1052462, 1052465, 1052525** - PI is considered as an acceptable species, with the exception of, on frost prone sites only, it can be considered a preferred species.
- c) Standards Id's **1052462, 1052483, 1052509, 1052516, 1052524**, – In those circumstances where the presence of healthy, immature or mature Black Spruce (Sb) stems exists on the pre-harvest site, Sb will be considered an acceptable species.
- d) The above stocking standard variances are deemed consistent with:
 - Land Management Handbook No. 24; A Field Guide for Site Identification and Interpretation for the Southwest Portion of the Prince George Forest Region (January 1993).
 - Updates to the Reference Guide for FDP Stocking Standards (2014): Climate Change Related Stocking Standards, FLNRO, February 3, 2014.
- e) Standard Id **1052455** (ESSF mv1, site series 01), – In consideration of climate change related to stocking standards, Fdi will be considered an acceptable species on non-frost prone mesic sites.
- f) Standards Id **1052455, 1052468, 1052471, 1052472, 1052473, 1052478, 1052479, 1052481, 1052483, 1052484, 1052500, 1052503, 1052504, 1052519, 1052521, 1052522**. In consideration of climate change related to stocking standards, Lw will be considered an acceptable species within the LW 1 Seed Planning Zone and the number of Lw seedlings planted will be limited to a maximum of 10% of the combined total number of seedlings planted by the Timber Sales Manager, during each fiscal year, within the Stuart-Nechako Natural Resource District. The minimum free growing height of Lw is equal to the minimum free growing height of lodgepole pine (Pli) plus an additional 0.20 meters for any given BEC zone.
- g) The above stocking standard variances are deemed consistent with:
 - Updates to the Reference Guide for FDP Stocking Standards (2014): Climate Change Related Stocking Standards, FLNRO, February 3, 2014.
 - Landscape-level Ecological Tree Species Benchmarks Pilot Project: First Approximation Benchmarks in Five British Columbia Timber Supply Areas (Shirley Mah & Kevin Astridge, 2014).
 - Chief Forester Guidance for the incorporation of western larch into Forest Stewardship Plan and Woodlot Licence Plan stocking standards in areas of assisted range and population expansion (Jim Snetsinger, Dec 2010).
 - Amendments to the spatial data for western larch seed planning zones Lw1, Lw2 & Lw3, May 2014.

8.0 POST FSP APPROVAL: STAKEHOLDER INFORMATION SHARING

The Timber Sales Manager will share proposed BCTS development activities (specifically proposed cutblocks and roads) with stakeholders identified as having an interest in the area of the proposed activity. This information sharing opportunity will be provided on an annual basis, or as new development is proposed.

9.0 SIGNATURES

9.1 Person Involved in the Preparation of the Plan

Bruce Middleton, RPF

Planning Officer, Stuart-Nechako Business Area

9.2 Signature of Person Required to Prepare the Plan

Cameron Simpson, RPF

Timber Sales Manager
Stuart-Nechako Business Area

Original Signed by Cameron Simpson

August 23, 2022

Signature

Date

"I certify that I have reviewed this document and although I did not personally supervise the work, I have determined that it has been done to the standards expected of a member of the Association of British Columbia Forest Professionals."

**BC Timber Sales
Stuart-Nechako Business Area**



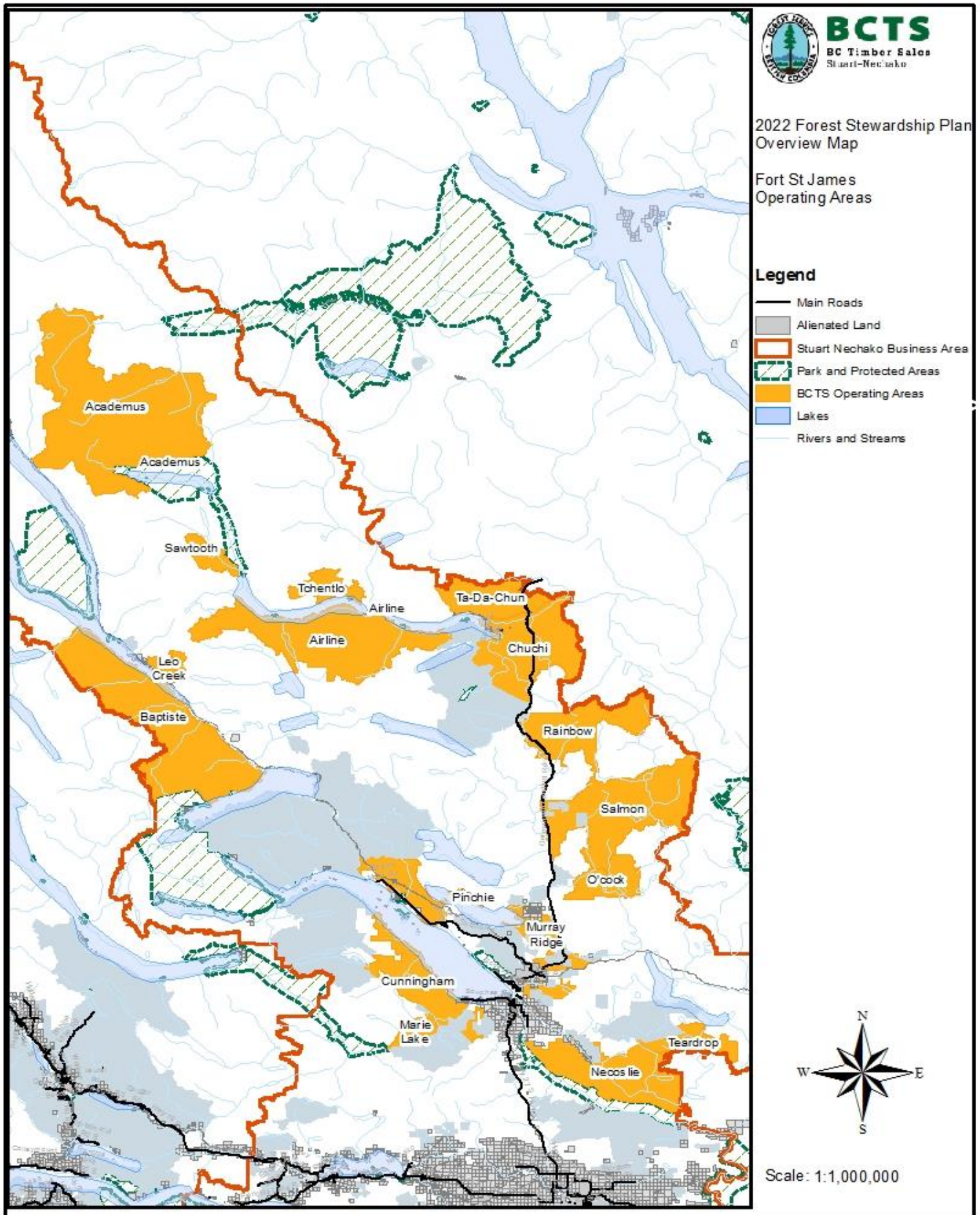
**Fort St. James
Forest Stewardship Plan**

2022 Replacement

APPENDIX 1

**Overview Map of BCTS Fort St. James
Timber Pricing Areas in the Stuart
Nechako Forest District**

Appendix 1: BCTS Fort St. James Timber Pricing Areas in the Stuart Nechako Forest District



**BC Timber Sales
Stuart-Nechako Business Area**

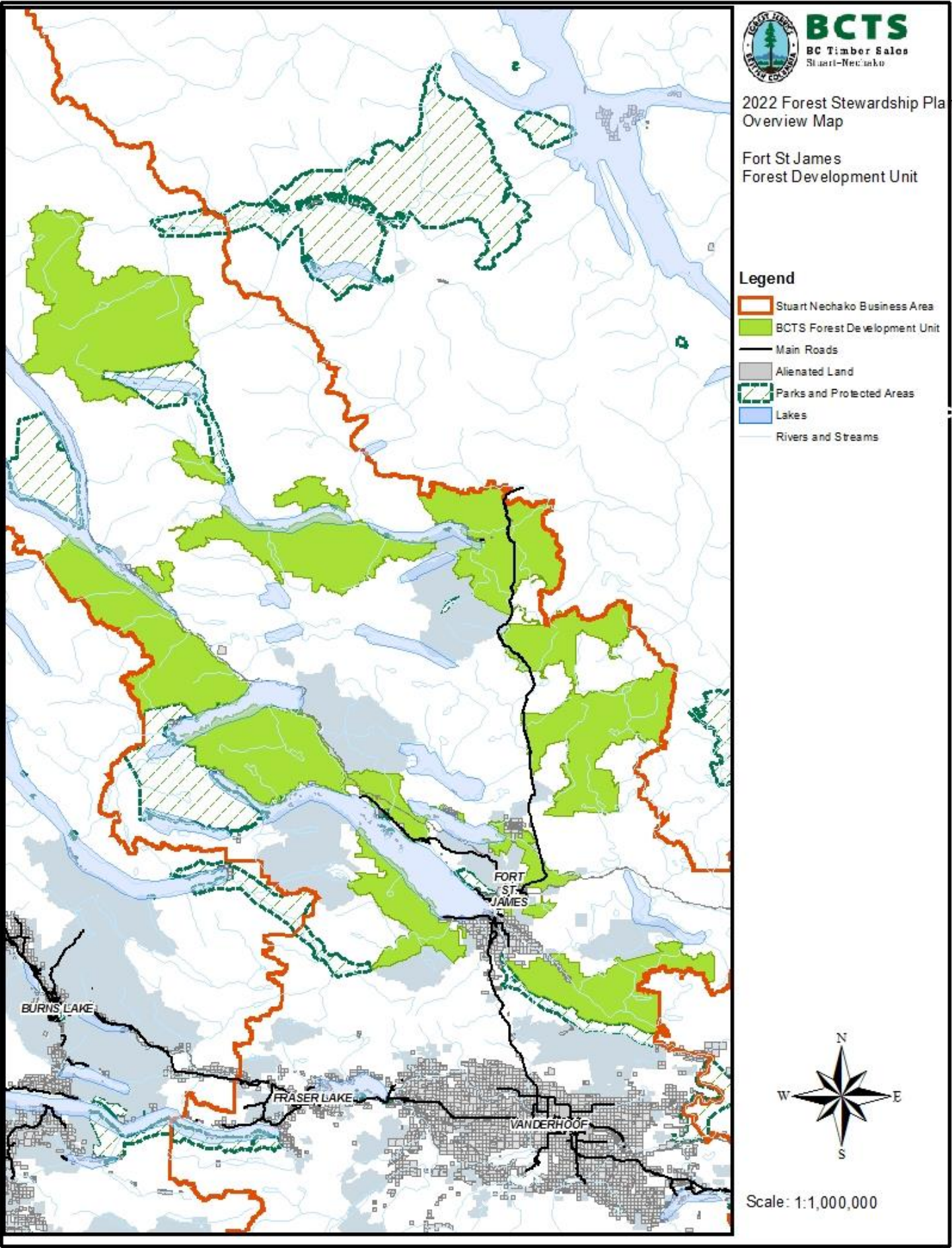


**Fort St. James
Forest Stewardship Plan**

2022 Replacement

APPENDIX 2

**Overview Map of the BCTS Fort St. James
Forest Development Unit (FDU) in the Stuart
Nechako Forest District**



**BC Timber Sales
Stuart-Nechako Business Area**



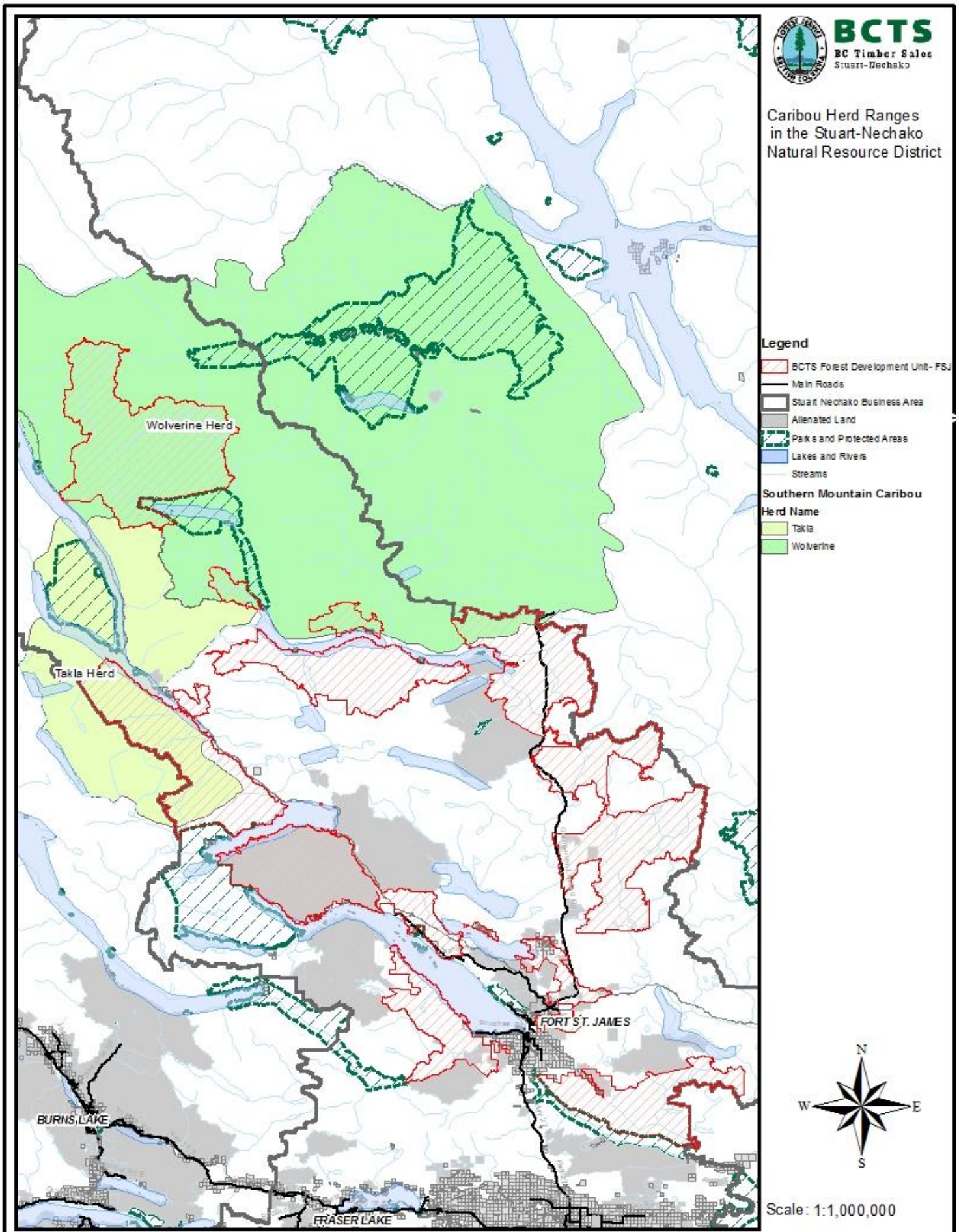
**Fort St. James
Forest Stewardship Plan**

2022 Replacement

APPENDIX 3

**Overview Map of the Caribou Herd Ranges in the
BCTS Fort St. James Forest Development Unit (FDU)
of the Stuart Nechako Forest District**

Appendix 3: Caribou Herd Ranges in the BCTS Fort St. James Forest Development Unit (FDU)



**BC Timber Sales
Stuart-Nechako Business Area**



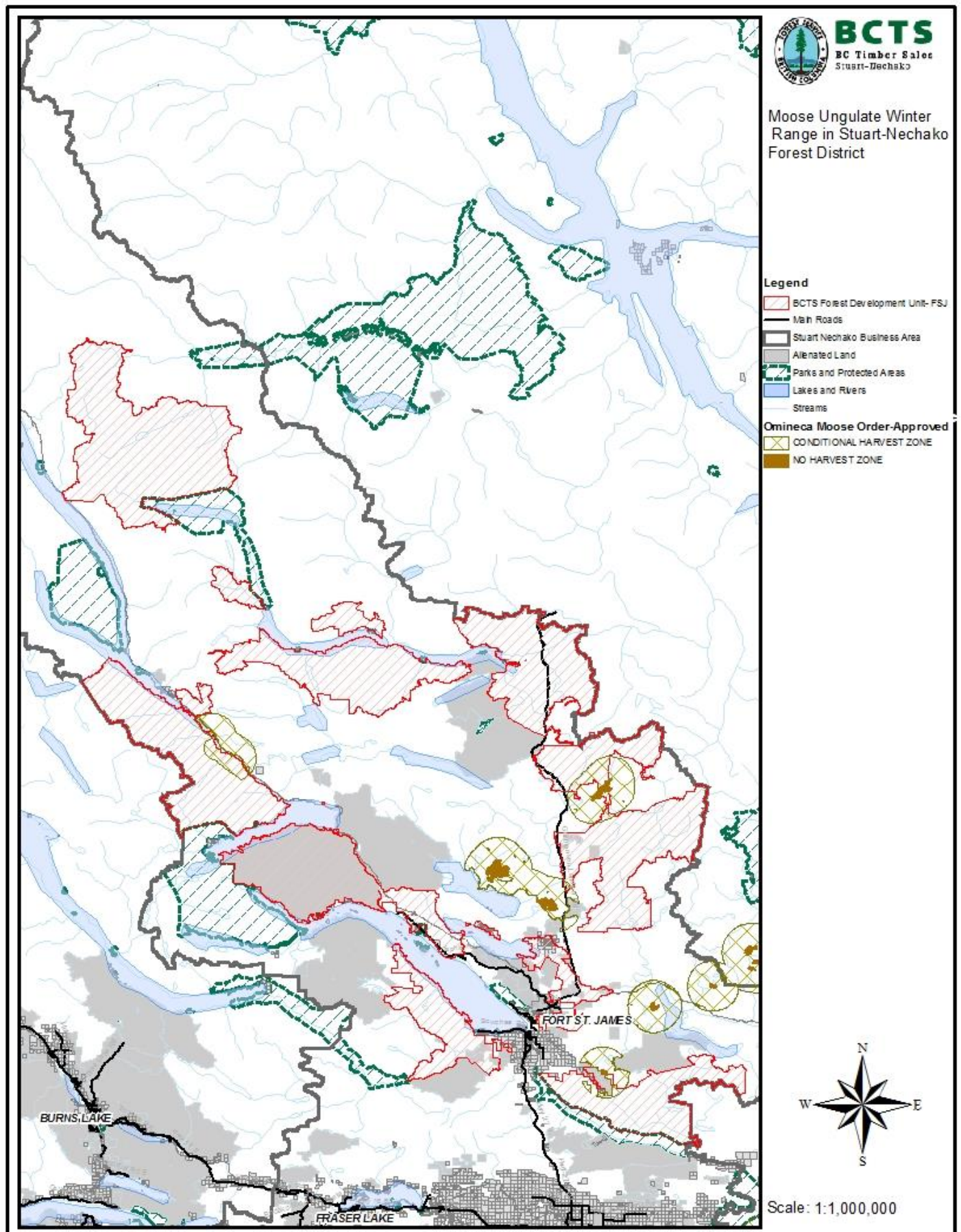
**Fort St. James
Forest Stewardship Plan**

2022 Replacement

APPENDIX 4

**Overview Map of the Moose Ungulate Winter Range
in the BCTS Fort St. James Forest Development Unit
(FDU) of the Stuart Nechako Forest District**

Appendix 4: Moose UWR in the BCTS Fort St. James Forest Development Unit (FDU)



**BC Timber Sales
Stuart-Nechako Business Area**



**Fort St. James
Forest Stewardship Plan**

2022 Replacement

APPENDIX 5

BCTS FSP Content Maps

1:100,000 scale

Stuart Nechako Forest District

PDF Copies of the FSP Maps Are Available Through The Link Below

[www.for.gov.bc.ca - /ftp/TSN/external/!publish/](http://www.for.gov.bc.ca/-/ftp/TSN/external/!publish/)

**BC Timber Sales
Stuart-Nechako Business Area**



**Fort St. James
Forest Stewardship Plan**

2022 Replacement

APPENDIX 6:

**BCTS – Fort St. James Forest Stewardship Plan
Stocking Standards in the Stuart Nechako Forest
District**

Term: September 1, 2022, to August 31, 2027

Even-aged Stand Stocking Standards*

Standards ID	Biogeoclimatic Classification		Species (Ecological Suitability)		Stocking (Density)			Regen Delay (yrs)	Free Growing Min. Height	
	Zone/ Subzone	Site Series	Preferred (p)	Acceptable (a)	TSS (wsph)	MSS pa (wsph)	MSS p (wsph)		species	height (m)
1052455	ESSFmv1	01	Sx Pl	Bl Fd ^{11e} LW ^{11f}	1200	700	600	4	Pl Others	1.6 0.8
1052456		02	Pl	Bl	1000	500	400	7	Pl Bl	1.2 0.6
1052457		03	Bl Sx Pl		1000	500	400	7	Pl Others	1.2 0.6
1052458		04	Bl Sx	Pl ^{11b}	1000	500	400	7	Pl Others	1.2 0.6
1052459		05	Bl ^{1,32} Sx ^{1,32}	Pl ^{11b}	1000	500	400	4	Pl Others	1.2 0.6
1052460	ESSFmv3	01	Bl Sx	Pl ^{11b}	1200	700	600	4	Pl Others	1.6 0.8
1052461		02	Pl ³⁴ Sx ²⁸	Bl ²⁸	1000	500	400	4	Pl Others	1.2 0.6
1052462		03	Bl Sx	Pl ^{11b} Sb ^{11c}	1000	500	400	4	Pl Others	1.2 0.6
1052463		04	Bl Sx	Pl ³⁴	1200	700	600	4	Pl Others	1.6 0.8
1052464		05	Bl Sx	Pl ³⁴	1200	700	600	4	Pl Others	1.6 0.8
1052465		06	Bl Sx	Pl ^{11b}	1200	700	600	7	Pl Others	1.6 0.8
1052466		07	Bl ^{1,32} Sx ^{1,32}	Pl ^{1,34}	1000	500	400	4	Pl Others	1.2 0.6
1052467		08	Sx ²⁸ Pl ³⁴	Bl ²⁸	1000	500	400	4	Pl Others	1.2 0.6
1052468	SBSdk	01	Pl Sx Fd ^{9,18}	LW ^{11f}	1200	700	600	7	Pl Fd Sx	2.0 1.4 1.0
1052469		02	Pl Sx ^{28,57}	Fd ^{11a}	1000	500	400	7	Pl Sx Fd	1.4 0.8 1.0
1052470		03	Pl Sx ^{28,57}	Sb ²⁸ Fd ^{11a}	1200	700	600	7	Pl Fd Others	2.0 1.4 1.0
1052471		04	Fd Pl Sx ²⁸	LW ^{11f}	1200	700	600	7	Pl Fd Sx	2.0 1.4 1.0

*Additional requirements are contained under 'Footnote and Definitions'.

Free-Growing Date: for each of the Stocking Standards Id's listed above, the free-growing date is established at 20 years.

Standards ID	Biogeoclimatic Classification		Species (Ecological Suitability)		Stocking (Density)			Regen Delay (yrs)	Free Growing Min. Height	
	Zone/ Subzone	Site Series	Preferred (p)	Acceptable (a)	TSS (wsph)	MSS pa (wsph)	MSS p (wsph)		species	height (m)
1052472	SBSdk	05	PI Sx ²⁸ Fd ^{9,18}	LW ^{11f}	1200	700	600	7	PI Fd Sx	2.0 1.4 1.0
1052473		06	PI Sx Fd ^{3,9,32}	LW ^{11f}	1200	700	600	4	PI Fd Sx	2.0 1.4 1.0
1052474		07	Sx ^{1,32} PI ¹		1000	500	400	4	PI Sx	1.4 0.8
1052475		08	Sx ^{1,32} PI ¹		1200	700	600	4	PI Sx	2.0 1.0
1052476		09	PI ¹ Sb ¹		400	200	200	4	PI Sb	1.4 0.8
1052477		10	PI ¹ Sb ¹ Sx ^{1,32}		400	200	200	4	PI Others	1.4 0.8
1052478	SBSdw3	01	Fd PI Sx ³²	LW ^{11f}	1200	700	600	7	PI Fd Sx	2.0 1.4 1.0
1052479		02	Fd ²⁷ PI	Sx ^{28, 57} LW ^{11f}	1000	500	400	7	PI Fd Sx	1.4 1.0 0.8
1052480		03	PI	Sx ^{28, 57, 32} Fd ^{11a}	1200	700	600	7	PI Sx Fd	2.0 1.0 1.4
1052481		04	Fd PI	Sx ^{57, 32} LW ^{11f}	1200	700	600	7	PI Fd Sx	2.0 1.4 1.0
1052482		05	PI	Sx ^{32,57} Fd ^{11a} Sb	1200	700	600	7	PI Fd Others	2.0 1.4 1.0
1052483		06	PI Sx ³² Fd ³²	BI ²⁹ Sb ^{11c} LW ^{11f}	1200	700	600	4	PI Fd Others	2.0 1.4 1.0
1052484		07	Sx PI	BI ²⁹ Fd ^{11a} LW ^{11f}	1200	700	600	4	PI Fd Others	2.0 1.4 1.0
1052485		08	PI Sx Fd ^{3,32}	BI ²⁹	1200	700	600	4	PI Fd Others	2.0 1.4 1.0
1052486		09	PI ¹ Sx ^{1,32}	BI ^{1,29}	1000	500	400	4	PI Others	1.4 0.8
1052487		10	PI ¹ Sb ¹ Sx ^{1,32}		400	200	200	4	PI Others	1.4 0.8

*Additional requirements are contained under 'Footnote and Definitions'.

Free-Growing Date: for each of the Stocking Standards Id's listed above, the free-growing date is established at 20 years.

Standards ID	Biogeoclimatic Classification		Species (Ecological Suitability)		Stocking (Density)			Regen Delay (yrs)	Free Growing Min. Height	
	Zone/ Subzone	Site Series	Preferred (p)	Acceptable (a)	TSS (wsph)	MSS pa (wsph)	MSS p (wsph)		species	height (m)
1052488	SBSmc2	01	PI Sx	BI ²⁹	1200	700	600	7	PI Others	1.6 0.8
1052489		02	PI	BI ³² Sx ³²	1000	500	400	7	PI Others	1.2 0.6
1052490		03	PI Sx ^{32,57}	BI ²⁹ Sb	1200	700	600	7	PI Others	1.6 0.8
1052491		04	PI Sx	BI ²⁹	1200	700	600	4	PI Others	1.6 0.8
1052492		05	PI Sx	BI ²⁹	1200	700	600	4	PI Others	1.6 0.8
1052493		06	PI Sx	BI ²⁹	1200	700	600	4	PI Others	1.6 0.8
1052494		07	PI Sb Sx ³²	BI ⁵³	1000	500	400	4	PI Others	1.2 0.6
1052495		08	PI Sx ³²	BI ²⁹	1200	700	600	4	PI Others	1.6 0.8
1052496		09	Sx ¹ PI ¹	BI ²⁹	1200	700	600	4	PI Others	1.6 0.8
1052497		10	Sx ^{1,32} PI ¹	BI ^{1,29,32}	1000	500	400	4	PI Others	1.2 0.6
1052498		11	Sx ^{1,32} PI ¹	BI ^{1,29,32}	1000	500	400	4	PI Others	1.2 0.6
1052499		12	PI ¹ Sb ¹ Sx ^{1,32}		400	200	200	4	PI Others	1.2 0.6
1052500	SBSmk1	01	PI Sx Fd ^{3,32}	BI ²⁹ LW ^{11f}	1200	700	600	7	PI Fd Others	2.0 1.4 1.00
1052501		02	PI	Sx ²⁸ Fd ^{11a}	1200	700	600	7	PI Sx Fd	2.0 1.0 1.4
1052502		03	PI	Sx Fd ^{11a}	1200	700	600	7	PI Sx Fd	2.0 1.0 1.4
1052503		04	Fd PI	Sx ²⁸ BI ^{28, 29} LW ^{11f}	1200	700	600	7	PI Fd Others	2.0 1.4 1.00
1052504		05	PI Sx Fd ^{3,32}	BI ²⁹ LW ^{11f}	1200	700	600	7	PI Fd Others	2.0 1.4 1.00
1052505		06 SMR = 3 & 4	PI	Sx ³² Fd ^{11a} Sb	1200	700	600	7	PI Fd Others	2.0 1.4 1.0
1052506		06 SMR = 5 & 6	PI Sx ³²	Sb	1200	700	600	7	PI Others	2.0 1.0

*Additional requirements are contained under 'Footnote and Definitions'.

Free-Growing Date: for each of the Stocking Standards Id's listed above, the free-growing date is established at 20 years.

Standards ID	Biogeoclimatic Classification		Species (Ecological Suitability)		Stocking (Density)			Regen Delay (yrs)	Free Growing Min. Height	
	Zone/ Subzone	Site Series	Preferred (p)	Acceptable (a)	TSS (wsph)	MSS pa (wsph)	MSS p (wsph)		species	height (m)
1052507	SBSmk1	07	PI Sx Fd ^{3,8,32}	BI ²⁹	1200	700	600	4	PI Fd Others	2.0 1.4 1.00
1052508		08	Sx ^{32,1} PI ¹	BI ²⁹	1200	700	600	4	PI Others	2.0 1.0
1052509		09	Sx ^{1,32} PI ¹	BI ^{1, 29} Sb ^{11c}	1000	500	400	4	PI Others	1.4 0.8
1052510		10	PI ¹ Sb ¹ Sx ^{1,32}		400	200	200	4	PI Others	1.4 0.8
1052511	SBSwk3	01	PI Sx ³⁵	BI ²⁹ Fd ^{11a}	1200	700	600	4	PI Fd Others	2.0 1.4 1.00
1052512		02	PI	BI ²⁸ Sx ^{28,35} Fd ^{11a}	1000	500	400	7	PI Fd Others	1.4 1.0 0.8
1052513		03	Fd ¹⁶ PI	Sx ^{28,35}	1200	700	600	7	PI Fd Sx	2.0 1.4 1.00
1052514		04	PI Sx ³⁵	BI Fd ^{11a}	1200	700	600	7	PI Fd Others	2.0 1.4 1.00
1052515		05	PI	Sb Sx ³⁵	1200	700	600	7	PI Others	2.0 1.00
1052516		06	PI Sx ^{35,57}	BI ²⁹ Sb ^{11c}	1200	700	600	4	PI Others	2.0 1.0
1052517		07	Sx ^{32,35,1} PI ¹	BI ^{29,32}	1200	700	600	4	PI Others	2.0 1.00
1052518		08	Sx ^{1,32,35} PI ¹	BI ^{1,29,32}	1000	500	400	4	PI Others	1.4 0.8
1052519	SBSwk3a	01	Fd ³² PI Sx	BI ²⁹ LW ^{11f}	1200	700	600	4	PI Fd Others	2.0 1.4 1.00
1052520		02	PI	BI ²⁸ Sx ²⁸ Fd ^{11a}	1000	500	400	7	PI Fd Others	1.4 1.0 0.8
1052521		03	Fd PI	Sx ²⁸ LW ^{11f}	1200	700	600	7	PI Fd Sx	2.0 1.4 1.00
1052522		04	Fd PI Sx	BI LW ^{11f}	1200	700	600	7	PI Fd Others	2.0 1.4 1.00

* Additional requirements are contained under 'Footnote and Definitions'.

Free-Growing Date: for each of the Stocking Standards Id's listed above, the free-growing date is established at 20 years

Standards ID	Biogeoclimatic Classification		Species (Ecological Suitability)		Stocking (Density)			Regen Delay (yrs)	Free Growing Min. Height	
	Zone/ Subzone	Site Series	Preferred (p)	Acceptable (a)	TSS (wsph)	MSS pa (wsph)	MSS p (wsph)		species	height (m)
1052523	SBSwk3a	05	PI	Sb Sx Fd ^{11a}	1200	700	600	7	PI Fd Others	2.0 1.4 1.00
1052524		06	PI Sx ⁵⁷	Bl ²⁹ Sb ^{11c} Fd ^{11a}	1200	700	600	4	PI Fd Others	2.0 1.4 1.0
1052525		07	Fd ³² Sx ^{32, 1}	Pl ^{11b} Bl ^{29,32}	1200	700	600	4	PI Fd Others	2.0 1.4 1.00
1052526		08	Sx ^{1,32} Pl ¹	Bl ^{1,29,32}	1000	500	400	4	PI Others	1.4 0.8

*Additional requirements are contained under 'Footnote and Definitions'.

Free-Growing Date: for each of the Stocking Standards Id's listed above, the free-growing date is established at 20 years.

Footnotes (For Guidance)

<u>1</u>	elevated micro sites are preferred
<u>3</u>	restricted to coarse-textured soils
<u>6</u>	restricted to nutrient-very-poor sites
<u>8</u>	restricted to steep slopes
<u>9</u>	restricted to southerly aspects
<u>16</u>	suitable in the southern portion of the biogeoclimatic unit
<u>18</u>	restricted to eastern portion of biogeoclimatic unit in region
<u>27</u>	partial canopy cover required for successful establishment
<u>28</u>	limited by moisture deficit
<u>29</u>	Risk of heavy browse by moose
<u>32</u>	limited by growing-season frosts
<u>34</u>	risk of snow damage
<u>35</u>	risk of weevil damage
<u>53</u>	Minor component
<u>57</u>	on moist sheltered micro sites only

Conifer Tree Species

“Bl” means subalpine fir

“Fd” means Douglas fir

“Pl” means lodgepole pine

“Sb” means black spruce

“Se” means Engelmann spruce; or “Sx” where “Se” is not available

“Sw” means white spruce

“Sx” means hybrid spruce or interior spruce

“Lw” means Western Larch

Other Definitions

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

“p” - preferred species which are ecologically suited to the site, and management activities are aimed primarily at establishing these species.

“a” – acceptable species are also ecologically suited to the site, but management activities are aimed secondarily towards establishing them.

“TSS” means the target stocking standard (density) in terms of healthy well-spaced stems per hectare.

“MSS p” – means the minimum number of healthy well-spaced trees per hectare of preferred species that must be present on an area to consider it satisfactorily stocked.

“MSS pa” - means the minimum number of healthy well-spaced trees hectare of preferred and acceptable species that must be present on an area to consider it satisfactorily stocked.

Multi-layered Stand Stocking Standards

Target Density (stems/ha)	Layer**	Stocking*** (well-spaced/ha) Target pa MIN pa MIN p	Target Density (stems/ha)	Layer**	Stocking*** (well-spaced/ha) Target pa MIN pa MIN p
1200	1	600 300 250	800	1	300 150 150
	2	800 400 300		2	400 200 200
	3	1000 500 400		3	600 300 300
	4	1200 700 600		4	800 400 400
1000	1	400 200 200	600	1	300 150 150
	2	500 300 250		2	400 200 200
	3	700 400 300		3	500 300 300
	4	1000 500 400		4	600 400 400
900	1	400 200 200	400	1	200 100 100
	2	500 300 250		2	300 125 125
	3	700 400 300		3	300 150 150
	4	900 500 400		4	400 200 200

*Maximum regeneration delay is seven years. Regeneration delay can be met immediately following harvest if the residual stand has no significant damage or pest problems and meets minimum stocking standards.

****Stand Layer Definition**

Layer 1 Mature trees ≥ 12.5cm dbh

Layer 3 Sapling trees ≥ 1.3m height to 7.4cm dbh

Layer 2 Pole trees 7.5cm to 12.4cm dbh

Layer 4 Regeneration trees < 1.3m height

***pa – preferred and acceptable species

p – preferred species

MIN – minimum

Preferred and acceptable species and Target Density are as specified in the Even-aged Stands Stocking Standards.

Maximum coniferous density (only applicable to conifers in layer 3), post-spacing densities, MITD (for layers 2, 3 and 4), minimum free growing height and preferred/acceptable species are as specified in the Even-aged Stand Stocking Standards

