Gross Area: 12.6 ha

HU 1: Ground-Based - 9.8 ha NET

WTRA - 2.8 ha NET

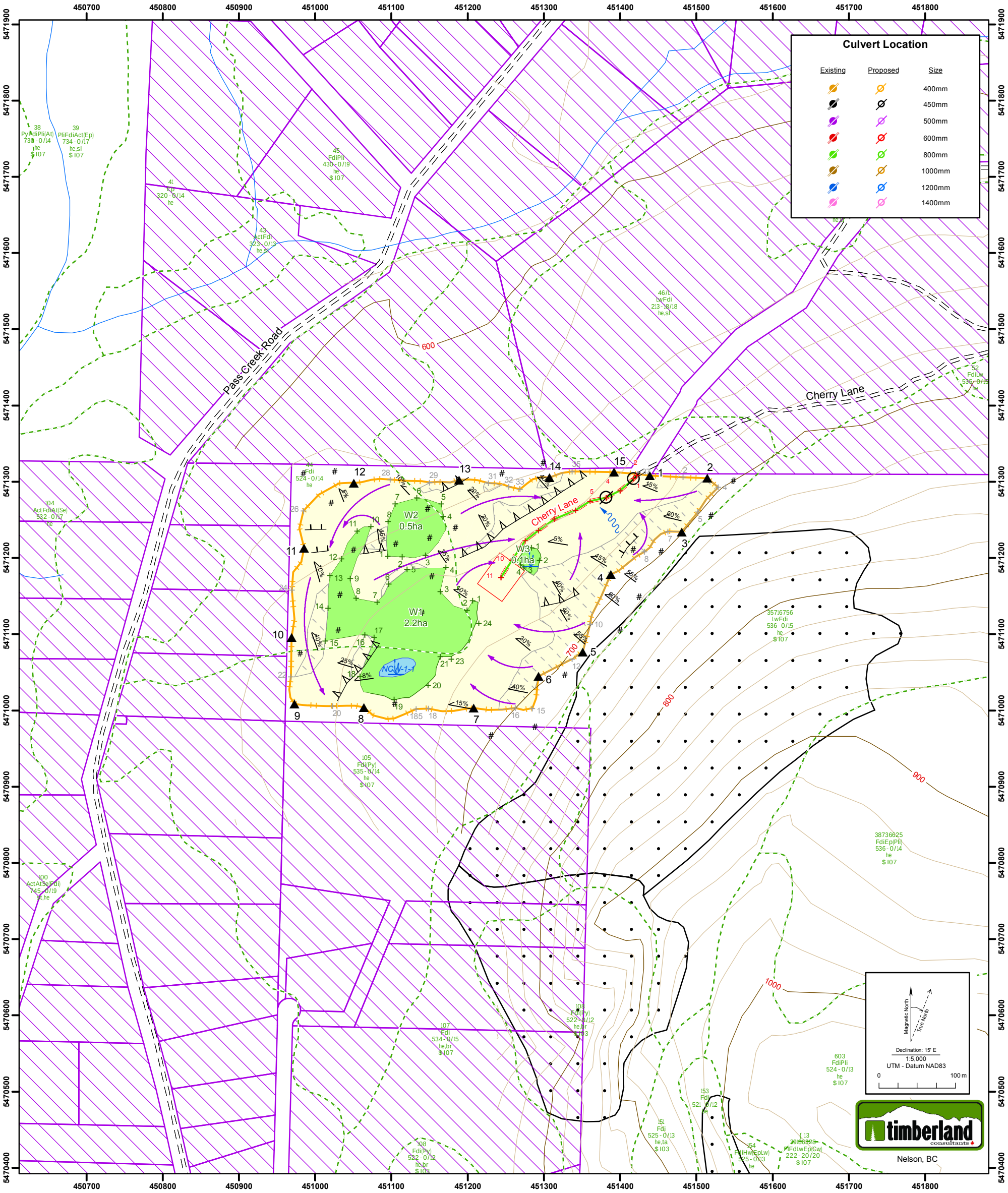
PAS - 0.0 ha

Harvest Plan Map

TA1130-1

Sentinel

BCTS
BC Timber Sales
Kootenay



Date: 1/15/2021	Drawn By: KS	Elevation (min / max): 625-715	Private Land	Lat/Long: 49°23'28"N / -117°40'21"W	Wet Area
Mapsheet: 82F 032	Cable	Ridge	Cliff	Slope Break	Reach Break / Cabin / Blowdown / Rock #
Existing Cutblock		Existing Road	Proposed Road	Seep / SP Plot	Perm. Landing
Wildlife Tree Retention Area		Existing Trail	Backspar Trail	Steep Slopes >35%	Temp. Landing
OGMA	Non-Merch	Proposed Skid Trail	Yarder Trail	Yarder Direction / Skid Direction	
Cutblock Boundary		MFZ	RMZ / Grizzly Bear Mgmt Area	Creek / Intermittent Creek	
Bench]]]	Gully › › ›	Draw)))	Permanent Access Licensee Construct	Slope and Direction 25%	Prop. Skid Crossing
Station +12	Falling Corner ▲ FC2		Temporary Access Licensee Construct	Terrain Stability - IV	Terrain Stability - V

Path: G:\PROJ\T16011_BCTS\TA1130_sentinel\Maps\HP Maps\TA1130_i4_Map_HP_bk1.mxd

1.5 RIPARIAN ASSESSMENT

Block	Riparian I.D. and Class	RMA	SU	Width (m)	SPH Retained	Comments (Indicate if in a Community Watershed)
1	NCW-1-1	N/A	1	N/A	-	NCW-1-1 is located entirely within WTRA1 as well as a 30m buffer. No further retention is required. This development is located within the Norns Community Watershed.

Management Strategies: See Non-Merchantable Section and the Harvest /Operational Constraints Section Below

Safety Highlights:

In addition to the standard safety hazards and risks associated with all aspects of forest management, the following safety hazard(s) apply to this block and must be enforced and practiced:

1. Public Traffic on Cherry lane or in block from surrounding local residents.
2. Exposed cobbles and boulders
3. Steep slopes >35% in ground-based harvest areas.
4. Partial Cut harvesting: Retention of 50% basal area of largest stems.

Remedial Action

1. Personnel will be informed of this hazard and signage will be posted near the proposed development when harvesting and road-building activities are being conducted.
2. Personnel will be informed of this hazard.
3. Personnel will be informed of this hazard. These areas are displayed on the HP map.
4. Personnel will be informed of this hazard.

Leave Tree Specifications:

Table 1. - Layer 1 Reserved Timber[1]

Block	HU	Selection Priority	Species	Size	Stems per Hectare			Distribution[2]			
					Target	Minimum	Maximum	S	G	I	R
1	1	As marked in the field - Lw, Fdi, Py, Pw, Plus deciduous At, Ac, Ep (not marked) Preference for fire resistant, larger stems	Conifer trees have been marked in the field, Deciduous (At, Ac, Ep) have not been marked.	N/A	N/A	N/A	N/A	√			√

Additional Requirements/Notes: **Trees have been marked to leave in the field**. The largest and most Windfirm stems were preferred. Single tree, regularly distributed is the goal to achieve the **objective of 3-5m crown separation between canopies as a fire mitigation strategy (shaded fuel break)**. Broadleaf species were included as they are considered less flammable. Some marked reserve trees may need to be harvested due to ground-based machinery operability issues (trees in the way of skid routes, or trees which pose a risk to safety): **An equivalent size and species of tree must be selected to leave if a marked tree is cut. Rub trees should be utilized during skidding to prevent damage to residual trees and supporting roots.**

Calculated from the Cruise: Approximately 330sph will be removed, leaving 140sph of the larger more windfirm stems standing to attain the goal of 50% basal area retention.

[1] Refer to *Appendix I* for *Table of Reserve Timber Abbreviations and Definitions* [2] *Distribution Types: S: Single Trees, G: Groups of Trees, I: Irregularly Distributed, R: Regularly Distributed*

Note: Safety is a priority when conducting operations near reserved timber. Refer to TSL Schedule "A", Section 2.00 regarding Dangerous Trees.

Table2. – Other Reserved Timber[1]

Non-Merchantable

Block	HU	Location(s)	Species	Size	Stems per Hectare	
					Target	Minimum
1	1	None	None	None	-	-

Additional Requirements/Notes: Remove (**Pile and burn**) non-merch timber to cut down on surface fuels as a fire mitigation strategy post-harvest.

Dead Trees to be Stubbed (where Mechanical Falling is utilized)

Block	HU	Species	Size	Stubbing Height	Stems per Hectare			Distribution[2]			
					Target	Minimum	Maximum	S	G	I	R
1	1	All	>/=35cmdbh	3-5m	7	1	10	√	√	√	

Dead trees to be stubbed have NOT been marked in the field. **Stub as high as possible.** Additional Requirements: 1. Stub trees must not pose a hazard to worker safety. 2. In selecting dead trees for stubbing, selection priority has been given to trees with signs of wildlife use (e.g. cavity nests, holes, and dens).

Coarse Woody Debris

Block	HU	Species	Size	M³ per Hectare		Distribution[2]			
				Target	Minimum	S	G	I	R
1	1	All	Manage for the minimum allowable level of CWD: 4 logs per hectare, each being at least 2 metres in length and at least 7.5cm in diameter at one end.	4	1	√	√	√	

[1] Refer to *Appendix I* for *Table of Reserve Timber Abbreviations and Definitions* [2] *Distribution Types: S: Single Stems/Logs, G: Groups of Stems/Logs, I: Irregularly Distributed, R: Regularly Distributed*

Note: Manage CWD to low levels as a method of fuel removal. Remove (**Pile and burn**) excess CWD: Preference is to retain logs with signs of advanced decay, bark off, and those buried partly in the organic soil layer. Logs are to be left flush to the ground, all limbs/branches removed, and a minimum of 10 m apart. Safety is a priority when conducting operations near reserved timber. Refer to TSL Schedule "A", Section 2.00 regarding Dangerous Trees. **As a reference 1 large telephone pole roughly equals 1m³.**

Harvest / Operational Constraints:

General Recommendations:

1. Bladed or Excavated trails may be required for safety in areas that may require adverse skidding and in areas with steep slopes.
2. Excavated or bladed trail construction should be minimized as practical, and avoided in areas of seepage or where shallow subsurface runoff is likely to be intercepted. If any trails are to overwinter then additional precautions should be taken including pulling back all watercourse crossings and any potentially unstable fill slopes, and installing frequent cross ditches in order to limit the potential for redirected runoff.
3. Machine use should be limited to areas where excessive scour, rutting, or compaction is avoidable. This would generally restrict machine use from areas of moderately steep or steeper slopes as well as any localized areas of wet, soft, or very loose soils. Some modified machine use (e.g. hoe chucking) may be possible in these areas if excessive disturbance is avoidable.
4. All road and trail drainage systems should be maintained and kept clear of debris during and subsequent to harvesting operations, including at and downslope of cross drain discharge locations.
5. Utilize "Rub Trees" to prevent damage to reserved stems during skidding. Reserve trees must remain free of gouges and wounds >1/3 stem circumference, and free of wounds on a supporting root.

TSA RECOMMENDATIONS: The following general recommendations are intended to further reduce the potential adverse effects of timber harvesting and temporary road construction:

Proposed Timber Harvesting

1. Ground skidding across natural drainage paths and surface watercourses should be avoided where practical. If this cannot be avoided, harvesting should be conducted during the drier months of the year, on a compressed snowpack, or effort made to ensure timber is skidded butt-first to minimize potential ground disturbance within such drainage features;
2. Timber harvesting should not be conducted under excessively wet site conditions, such as during spring snow melt or periods of heavy and prolonged rainfall;
3. A post-harvest inspection of each block should be completed to ensure all natural drainage features have been maintained. Logging debris from the wetted perimeter of all watercourses and subtle drainage features to ensure an accumulation of coarse woody debris does not result in a drainage diversion. These measures include ensuring the drainage network (i.e. culverts and ditch lines) along permanent roads remain functional as intended.

Proposed Temporary Roads and Trails

4. All temporary access roads and trails may be built using debris-supported fill slopes to reduce cut bank excavation and the potential for groundwater interception.
5. Appropriate drainage control measures should be implemented to ensure all natural drainage paths are maintained.
6. Drainage management along all temporary trails and roads should coincide with existing or proposed drainage structures along permanent access roads situated above or below each temporary road to avoid drainage diversions and/or concentrations, as well as ensure natural watercourses and drainage features are maintained.
7. All trails must be fully rehabilitated concurrently with the completion of the proposed timber harvesting, or else reviewed by a geotechnical professional to determine the suitability of extending the service life of each road. If harvesting is to be conducted during winter months, trails must be seasonally deactivated prior to the freshet by out-sloping where practical and installing cross ditches or waterbars to maintain natural drainage patterns.

TIMING RESTRICTION:

As requested by the Penticton Indian Band: No harvest in Spring or Early Summer (Harvest outside of ungulate calving time).

Kootenay Business Area Field Marking Standards

	Ribbon	Paint
Harvest Boundary	BCTS Block Boundary	
Falling Corners		FC#
WTRA Boundary	Reserve	
Reserve Boundary	Reserve	
Riparian Reserve Zone	Reserve	
Riparian Management Zone	Riparian Mgmt. Zone	
Management Zone	Management Zone	
Treatment Unit Boundary	Treatment Unit Boundary	
Reserve Trees		
Machine Free Zone	//// Machine Free Zone ////	
Cruising	Cruise Line	Plot Trees
Traverse Stations		
SP Plot Location		

	Ribbon	Paint
NCD & Stream Centers	Water Course	
Road P-Line		
Road Center Line	Road Centerline	
Landings	Landing	
Road Right of Way	R/W Boundary	
Road RP		
Culverts	Culvert	
Designated Crossing	Crossing	
Culvert RP Outside Right of Way		
Tail Holds / Guyline / Intermediate Supports		
Skid Trail / Back Spar Trail / Forwarding Trail	/ / / / / / Trail / / / / / /	
Recce Ribbon / D-Line / Skyline Roads	/ / / / / / / / / / / / / / /	

I certify that the work described herein fulfills standards expected of a member of the Association of British Columbia Forest Professionals, and that I did personally supervise the work.

RPF PRINTED NAME

Russ Fountain

DATE SIGNED

June 29, 2021

RPF'S SIGNATURE and SEAL

REGISTERED PROFESSIONAL FORESTER
PROVINCE OF BRITISH COLUMBIA
RUSSELL ELLIS FOUNTAIN
NO. 4979