WRR Field Trip – Marsh Pinnacles

Description: The proposed treatment area of 15.1 hectares, located approximately 6.5km south west of Quesnel, is within the Quesnel WUI risk class 2, with the Provincial Strategic Threat Analysis (PSTA) rating of high/extreme. The treatment has recreation trails throughout.

The treatment is located at the end (north) of Peterbrook Road, which continues as a recreation trail about halfway through the treatment unit. Peterbrook Road could serve as an anchor point for fire suppression. The objective of the treatment is to:

- Reduce fire intensity and rate of spread
- Reduce the potential for crown fire initiation by increasing base height of live crown to reduce ladder fuels
- Create opportunities for fire suppression
- Reduce overall wildfire risk in the Quesnel area

The prescribed treatment aims to meet these objectives by reducing crown, ladder, and ground fuel availability and reducing both vertical and horizontal fuel continuity. The treatment aims to reduce surface fire intensity below 2000kW/m.

	Treatment Unit 1	
	Pre-Treatment	Post-Treatment
SPH (conifers)	2819 sph	1000 (+/-50) sph
CBH (conifers)	6.06m	3m
Crown Closure	70% or less	50% or less
Surface fuel load (</=7.5cm)	0.43 kg/m2	< 0.5 kg/m2
Surface fuel load (7.6-20cm)	1.82 kg/m2	< 1.0 kg/m2
Surface fuel load (>20cm)	3.33 kg/m2	< 1.0 kg/m2
Rate of spread	8	2.52[3]
Critical surface fire intensity	2366 kW/m	378 kW/m
Predicted fire intensity	9792 kW/m	1890 kW/m

Species	m^3 Billed YTD
AS	37.21
BA	165.76
BI	31.63
CE	0.01
CO	0.05
FI	325.85
LO	439.26
SP	1025.94
	2025.70

Treatment Approach for Treatment Unit 1 (TU1)

- **Hand Treatment with Machine Utilization**: Hand crews will thin, prune, and clean up surface fuels in areas where machine access is limited. In machine-accessible areas, specialized equipment will be utilized to thin Layer 1 trees and process debris efficiently.
- **Tree Thinning**: We will thin Layer 1 trees from 574 stems per hectare to 331 stems per hectare. This process will involve the removal of green and dead large trees. The **Ponsse Scorpion King Harvester** will be used to process saw and pulp logs at the stump, sorting debris and logs separately.
- **Sorting and Processing**: Logs will be sorted into saw logs and pulpwood. Merchantable timber will be processed and transported to local mills such as **West Fraser in Quesnel**. Hand crews will thin smaller trees and prune leave trees to a height of 3 meters, following prescribed pruning guidelines.
- **Slash Management and Surface Fuel Clean-Up**: Debris created by thinning will be added to existing piles for chipping. We will utilize an **Albach Diamant 2000 Chipper** to process debris, which will then be transported offsite for bioenergy use. Any remaining debris will be dealt with in the spring using our **Air Burner T24**, minimizing smoke and environmental impact.
- **Minimizing Ground Impact**: Our **Ponsse Forwarder** will transport logs and debris without dragging them across the forest floor, reducing soil disturbance and preventing damage to reserve trees. The harvester's long reach ensures minimal movement within the treatment area, further minimizing the impact on the Old Growth Management Unit and Mule Deer Winter Range.

High Utilization and Meeting Project Objectives

- **Maximizing Utilization**: This approach ensures that over 90% of the wood fiber will be processed for industrial use, reducing waste. The **Albach Diamant 2000 Chipper** and **Air Burner T24** will ensure minimal debris is left behind, reducing the need for open burning.
- **Meeting Environmental Constraints**: By using low-impact equipment and processing logs on-site, we will meet the biodiversity target of 63% retention of Layer 1 stems. Our approach ensures that the Mule Deer Winter Range and Old Growth Management Unit are protected, with minimal tree falling in reserve areas.

Equipment List and Benefits:

1. **Ponsse Scorpion King Harvester (2020)**
   - **Location**: Prince George, BC.
   - **Purpose**: Used for thinning Layer 1 trees and processing saw and pulp logs at the stump.
   - **Benefits**: The harvester's long reach reduces machine movement, minimizing soil disturbance. Its ability to work on steep terrain makes it ideal for this project,particularly in sensitive areas like the Mule Deer Winter Range and the Old Growth Management Unit. It processes logs and debris on-site, ensuring compliance with biodiversity targets.

Ponsse Forwarder (2020)
- **Location**: Prince George, BC.
- **Purpose**: Transports sorted logs and debris to the roadside.
- **Benefits**: By carrying logs and debris rather than skidding them, the forwarder minimizes ground disturbance and ensures cleaner logs for transport to local mills.

This machine allows for precise removal of logs and debris, minimizing damage to reserve trees and the surrounding environment.

Albach Diamant 2000 Chipper (2022)
- **Location**: Prince George, BC.
- **Purpose**: Chips debris piles for transport to West Fraser for bioenergy production.
- **Benefits**: This chipper processes large volumes of debris quickly and efficiently, reducing the need for on-site burning and minimizing environmental impact. It ensures that all wood fiber is fully utilized, contributing to high sustainability goals.

Photos Pre-treatment

Post Treatment

FUEL MANAGEMENT PRESCRIPTION SUMMARY

Project ID

Name	Size
Marsh Pinnacles	15.1 ha
Location 6.5km south west of Quesnel	Coordinates 52°57'16.85" 122°34'57.67"

Surface Fuels

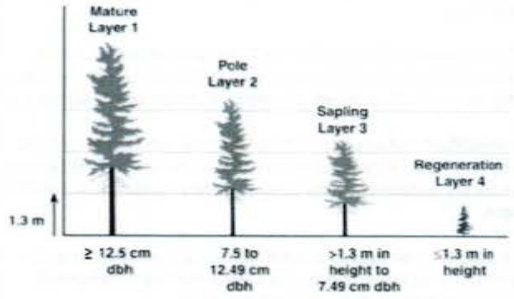
Size Class (diameter)	Existing	Target
Fine Woody Debris (<7 cm)	(TU 1) 0.48 kg/m2	(TU 1) 0.50 kg/m2
Large Diameter Woody Debris (7 cm to 20 cm)	(TU 1) 1.82 kg/m2	(TU 1) 1.0 kg/m2
Coarse Woody Debris (>20 cm)	(TU 1) 3.33 kg/m2	(TU 1) 2.0 kg/m2

Stand and Stock Table Summary

	Crown Base Height Range (m)	Age / Average Tree Height (m)	STEMS PER HECTARE (sph)			VOLUME PER HECTARE (m^3/ha)'		
			Existing	Cut	Leave	Existing	Cut	Leave
Total All Species Layer 1	5.8	17.0	574	243	331	393.62	181.29	212.33
Total All Species Layer 2	4.5	9.5	89	0	89	1.88	0	1.88
Total All Species Layer 3	1.35	3.19	1133	722	411	2.173	1.241	0.932
Total All Species Layer 4	0.36	0.72	1310	1160	150	-	-	-
TOTAL ALL LAYERS (from Stand and Stock Table appendix)			3106	2125	981	397.673	182.531	215.142

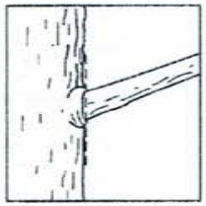
Conifer Thinning

Treatment Unit	Specifications
TU 1	Thin existing conifer trees to achieve 800 (+/-50)sph on average and allow for clumpy distribution of 4 to 10 trees. Approximately 3-meter inter-tree spacing, or 8 trees within a 5.64m radius circle sweep. If retaining a clump of trees, ensure there is crown separation from surrounding trees. Thinning operations must prioritize trees that show pest infestation or diseases. Species composition must be maintained. Thinning of most layer 3 and 4 trees (trees taller than 30 cm in height to trees smaller than 7.5 cm diameter). Retain all Douglas-fir trees 37.5 cm DBH and greater. Retain all layer 2 trees (between 7.5 cm and 12.5 cm diam.) Retain all deciduous when possible (except danger trees) and mature Spruce/balsam with cavities (exception for danger trees and if post-treatment prescribed stocking is exceeded). Attempt to leave 1-5 dead standing trees per hectares, this retention will provide habitat for cavity nesters; prioritize large (>35cm DBH) conifer trees. Note: No layer 1 trees are to be removed from the ungulate winter range overlap on the north east boundary.



Pruning

Treatment Unit	Specifications
TU 1	All conifer above 7.5 cm diameter will be pruned to 3m height or, if the tree is 5m tall or shorter – prune to half tree height. Measure to the lowest tree branch. Prune to branch collar, clean and straight, without scarring. Prune retained conifers to a height of 3m or half the height (for trees shorter than 5m).Pruning should be clean and straight on branch collar.



Debris Piling

Treatment Unit	Specifications
TU 1	Pile and burn woody debris to achieve fuel loading target of 0.8 kg/m2 (or 8 tonnes/ha) for fine woody debris (smaller than 7.0 cm diameter). Coarse woody debris (larger than 7.0cm diameter) should not exceed 2.0kg/m2 (or 20 tonnes/ha. Leave all 15cm and over debris that are over 50% decayed, cut and lie to the ground if necessary. Debris 20cm in diameter and over 10m long, are to be dispersed and left on site. Retention will be a maximum of 5 logs per hectare as per the guidelines for the Chief Foresters Guidance for this BEC zone. All piles must be located at least 10m away from boundaries and 5m away from leave/wildlife trees. Piles must be constructed such as to prevent damage to retained trees.

Debris Burning

Treatment Unit	Specifications
TU 1	Open burning is prescribed and all qualifying debris will be piled within the boundaries of the treatment area. All piles must be located at least 10m away from boundaries and 5m away from leave/wildlife trees. Piles must be constructed such as to prevent damage to retained trees, not exceed 3m by 3m in area and be as tall as they are wide. Pile burning will be completed in the late fall to early spring providing moisture conditions are high enough to minimize the risk of spread. All burning will require a burn registration number issued by the BC Wildfire Service. All burning will be in compliance with the Wildfire Act and Regulations, the Environmental Management Act, the Open Burning Smoke Control Regulations (OBSCR), and the BC Smoke Management Framework guidelines. All debris piles must be burned to achieve 98% consumption and must be completely extinguished before crews leave the area.

Critical Site Factors

Treatment Unit	Specifications
TU 1	Road 1 is 971m long, the first portion already built and will need ditching and brushing. Processing and loading can occur at the landing around 0+315 and at the end of the road. This TU has an old road, 0+315 is where the new development of road starts. Forwarding may be required dependent on time of harvest. Soils are clayey and any heavy equipment should only be used after the ground freezes. As per recommendations in the terrain stability assessment, natural hillslope and drainage patterns must be maintained as much as possible through avoidance of rutting, ground degradation, and rehabilitation of skid routes through decompaction of trail running surfaces to promote water infiltration. If any archaeological or migratory bird concerns are discovered, stop work in that area, notify Ministry representative, and move onto another zone until further instructions.