Fuel Management Prescription
West-2

A. PROJECT IDENTIFICATION	
PROJECT ID AND UNIT ID: Coquitlam Fuel Management 2023 West-2 Treatment Area	LAND OR TENURE HOLDER: Municipal Ownership – City of Coquitlam PID: 18217141
LATITUDE/LONGITUDE: N 49° 18.207' W 122° 48.970'	GEOGRAPHIC DESCRIPTION: This treatment area is in the Westwood neighbourhood of Coquitlam. It surrounds the water reservoir on the west side of Eagle Mountain Drive, to the north of residences on Diamond Crescent and east of residences on Topaz Court.
HIGHER-LEVEL PLAN(s): City of Coquitlam Community Wildfire Resiliency Plan (2021)	MAP REFERENCE NUMBER: 092G.108 (MOFR Mapsheet Grid, 1:50,000)

B. FUEL TREATMENT PROJECT DESCRIPTION			
OBJECTIVE:	☒ Public Safety	☐ Range Improvement	☐ Ecosystem Restoration
	☐ Recreation	☐ Wildlife Habitat	☒ Other: Critical Infrastructure protection
	Description: The main objectives of this fuel management prescription (FMP) are to reduce the ignition potential and potential fire behaviour within this municipally-held parcel of land. Achieving this will provide for: • Reduced fire risk to the critical water infrastructure (i.e., reservoir) and neighbouring private properties; • Enhanced safety and efficacy of first responders from Coquitlam Fire / Rescue Services (CFRS) and/or the BC Wildfire Service in the event of an interface fire in the area;		
STRATEGIES:	The objectives of this prescription can be achieved through a combination of the following strategies: • Abating accumulations of deadfall (fine woody debris and/or low-quality coarse woody debris); • Pruning retained conifers to decrease the vertical continuity of fuels; • Spacing understory conifer trees where dense thickets exist; • Removing low-habitat quality snags.		
METHODS:	The proposed strategies can be operationalized through a combination of the following methods: • Physically removing pre-existing debris accumulations and activity fuels; • Manual pruning (e.g., chainsaw, pole saw); • Manual (e.g., chainsaw, brush saw) tree falling; • Ensuring that all healthy deciduous trees, shrubs, and veteran trees are retained.		

C. FUEL TREATMENT UNIT (FTU) SUMMARY							
FTU	NET AREA (ha)	GROSS AREA (ha)	LEAVE AREAS (ha)	NP (ha)	NAR (ha)	TREATMENT REGIME[1]	General Description
TU 1	0.96	0.96	0.0	-	-	SNAG, TFB, PRU, SFR	Forest stands in this area are mixed conifer and deciduous, with an overstory dominated by western redcedar (*Thuja plicata,* Cw), western hemlock (*Tsuga heterophylla*, Hw), and bigleaf maple (*Acer macrophyllum*, Mb). Overstory densities are low (< 200 stems per hectare [SPH] on average) with a considerable amount of dead standing trees, mostly affected by western hemlock looper (*Lambdina fiscellaria,* IDL). Understory densities are also low and mixed in with deciduous shrubs, with a considerable amount of invasive species found throughout the stand. Many mature Cw stems have low-drooping crowns which provide vertical continuity from the surface to the canopy. Pockets of deadfall are considerable throughout the site. The site is moderately sloped (< 30%) with access from the reservoir and Eagle Mountain Drive.
TOTALS	0.96	0.96	0.0				

D. SITE CHARACTERISTICS							
FTU	CFFBPS FUEL TYPE	TIMBER TYPE	BGC SUBZONE, VARIANT & SITE ASSOC.	ELEVATION RANGE (m)	SLOPE POSITION	SLOPE RANGE (%)	ASPECT
TU 1	M-1/2 50%	$Cw_{50}Hw_{25}Mb_{25}$	CWH dm 01[2]	290 - 295	Mid	20 - 30	Variable (E/W off a N/S ridge)
FUEL TYPE DETERMINATION		Fuel types were determined with information from the Canadian Forest Service Pacific Forestry Center's *British Columbia Wildfire Fuel Typing and Fuel Type Layer Description* document (2018), in combination with professional determinations of fuel types and potential fire behaviour in the CWH BEC zone.					
REPRESENTATIVE WEATHER STATION		UBC Research. This weather station is located in a flat clearing approximately 18 km to the east of the treatment area. This station is located in the CWH dm and is ~130 m lower in elevation than the treatment area, which provides comparable weather outputs.					

E. SOIL CHARACTERISTICS							
FTU	SOIL TEXTURE	DUFF DEPTH (cm)	COARSE FRAGMENTS (%)	SOIL DISTURBANCE LIMIT (%)	SOIL HAZARD RATING		
					Compaction	Erosion	Displacement
TU 1	SiL	15	30	5	H	H	M

F. VALUES – *FOREST AND RANGE PRACTICES ACT*
RIPARIAN & LAKESHORE AREAS - Forest Planning and Practices Regulation (FPPR) division 3, Government Action Regulation (GAR) section 6, Forest and Range Practices Act (FRPA) sections 180 and 181

[1] PRU = Prune; SNAG = Falling Dead Trees; SFR = Surface Fuel Reduction; TFB = Thin From Below

[2] This is an early seral stand on a disturbed site with mixed, poorly defined soils and a considerable amount of fill and gravel on site. Few traditional site series effectively describe the area.

Is the proposed burning, cutting, modification or removal of trees, or site preparation, in an area that contains streams, lakes or wetlands?	Yes ☐ No ☒	There are no streams within the proposed treatment area. The west side of Eagle Mountain Drive (outside the eastern boundary of the treatment area) contains a storm watercourse (i.e., ditch). See below for treatment specifications regarding this ditch.		
RIPARIAN MANAGEMENT AREAS (RMAs) - FPPR sections 51 and 52				
STREAM, LAKE, WETLAND ID	CLASS	RRZ (m)	RMZ (m)	SPECIFICATIONS FOR RIPARIAN OR LAKESHORE MANAGEMENT AREAS
Eagle Mountain Drive Ditch	NCD	0	Within ditch-lines	Though this ditch is not considered as any type of habitat feature for wildlife, treatment activities should ensure that the drainage path is not obscured or altered. The following specifications should be followed: • Do not introduce any debris into the man-made watercourse; • Ensure that appropriate spill-kits are accessible when refueling chainsaws or machinery within the treatment area.
TEMPERATURE SENSITIVE STREAMS - FPPR section 53, GAR section 15, FRPA sections 180 and 181				
Are there temperature sensitive streams or direct tributaries to temperature sensitive streams within or adjacent to the proposed treatment area?	Yes ☐ No ☒	There are no temperature sensitive streams or direct tributaries to temperature sensitive streams within or adjacent to the proposed treatment area.		
ROAD CONSTRUCTION IN RIPARIAN MANAGEMENT AREAS - FPPR section 50				
Is road construction proposed in riparian management areas within the treatment area or an associated road permit (RP)?	Yes ☐ No ☒	No road construction is proposed in RMAs within the treatment area and there is no road permit associated with this treatment.		
STREAM CROSSINGS - FPPR section 55				
Will stream crossings be constructed within the proposed treatment area or a road permit road providing access to the treatment area?	Yes ☐ No ☒	No stream crossings will need to be constructed within the proposed treatment area and there is no road permit associated with this treatment. If the ditch needs to be crossed by any machinery, the crossing location and method should be approved by the contract supervisor.		
MAINTAINING STREAM BANK AND CHANNEL STABILITY ON S4, S5, and S6 STREAMS - FPPR section 52 (2)				
Is the proposed treatment in the RMZ of an S4, S5 or S6 stream that is directly tributary to an S1, S2 or S3 stream and the activity is likely to contribute significantly to the destabilization of the stream bank or the stream channel?	Yes ☐ No ☒	The proposed treatment is not within the RMZ of an S4, S5 or S6 stream that is directly tributary to an S1, S2 or S3 stream.		
DOMESTIC WATER LICENCES (inside or outside of community watershed) - FPPR section 59				

Does the proposed treatment area contain water sources that are diverted for human consumption by a licensed waterworks?	Yes ☐ No ☒	The proposed treatment area does not contain water sources that are diverted for human consumption by a licensed waterworks.		
LICENCED WATER WORKS (inside or outside of a community watershed) - FPPR section 60				
Does the proposed treatment include areas that are within 100m of a licensed waterworks?	Yes ☒ No ☐	There are no licensed waterworks overlapping or within 100 m of the treatment area.		
FISHERIES SENSITIVE WATERSHED - GAR section 14, FPPR section 8.1				
Are any activities proposed within a fisheries sensitive watershed?	Yes ☐ No ☒	No activities are proposed within a fisheries sensitive watershed.		
COMMUNITY WATERSHED - GAR section 8, FPPR section 8.2, 61, 62 and 84				
Does the proposed treatment area include areas that are within a community watershed?	Yes ☐ No ☒	The proposed treatment area is not located within a community watershed.		
Will this project require road or guard construction or deactivation within a community watershed?	Yes ☐ No ☒	See above.		
WATERSHED ASSESSMENT CONSIDERATIONS - FRPA section 180 areas with "significant watershed sensitivity"				
Does the proposed treatment area include areas that have watershed assessment considerations?	Yes ☐ No ☒	The proposed treatment area does not include any areas within significant watershed sensitivity.		
SOIL DISTURBANCE AND PERMANENT ACCESS STRUCTURES - FPPR sections 35 and 36				
Fuel Treatment Unit	Proposed Max Allowable Soil Disturbance	Proposed Max Soil Disturbance for Roadside Work Areas	Proposed Max Permanent Access	
TU 1	5	No separate RWA delineated.	No PAS proposed.	These allowable soil disturbance thresholds are derived from provincial legislation. Given the prescribed retention and prescribed treatment methods, meeting or being under the max. allowable soil disturbance of 5% should be feasible. Soil disturbance should be actively monitored by the contract supervisor, and any excessive amounts of disturbance may require a rehabilitation plan to be developed.
Do the proposed Permanent Access Structures exceed 7% of the total area?	Yes ☐ No ☒	No PAS are proposed for this treatment area.		
LANDSLIDES AND TERRAIN STABILITY - FPPR section 37				
Does the proposed treatment area include areas where terrain stability is a	Yes ☐ No ☒	The proposed treatment area does not include areas where terrain stability is a concern, nor were any indicators of potential slope instability noted in the field. The area is gently sloped, no road construction is proposed, and the number of healthy		

concern?		retained trees should adequately continue to provide slope stability.
SUITABLE SECONDARY STRUCTURE - FPPR section 43.1		
Does the proposed treatment area include a "targeted pine leading stand"?	Yes ☐ No ☒	The proposed treatment area does not include a targeted pine leading stand.
UNGULATE WINTER RANGE - GAR section 12, FRPA sections 180 and 181, FPPR section 69		
Does the proposed treatment area include areas within an Ungulate Winter Range?	Yes ☐ No ☒	The proposed treatment area does not include areas within a UWR.
WILDLIFE HABITAT AREA - GAR section 10, FRPA sections 180 and 181, FPPR section 69		
Does the proposed treatment area include any wildlife habitat areas (WHA)?	Yes ☐ No ☒	The proposed treatment area does not include any WHAs.
MIGRATORY BIRD CONVENTION ACT - 1994		
Does the proposed treatment have the potential to impact migratory bird habitat?	Yes ☒ No ☐	The proposed treatment has the potential to impact migratory bird habitat if implementation occurs during the peak breeding bird window. This treatment area is within Bird Conservation Region 5 (Nesting Zone A1) with a nesting period from late-March to mid-August, though the core nesting season is from early-May to mid-July. The nests of all migratory bird species are protected when they contain a live bird or a viable egg. All fuel management work occurring during this nesting period should be informed by a breeding bird survey performed by a qualified individual, which will determine the risk of the work to migratory birds, the presence of occupied nests, and establish appropriate buffer zones and setback distances from occupied nests. In addition, pileated woodpeckers, green herons, and great blue herons may inhabit the treatment area (as per Birds Canada's Nesting Calendar Query Tool), and their nests are protected year-round. No nests of these species were noted during field work, and it is unlikely that any suitable nesting trees of either of these species would be damaged or targeted for removal.
OBJECTIVES SET BY GOVERNMENT FOR WILDLIFE - FPPR section 7		
Does the proposed treatment area include areas to which objectives for wildlife under FPPR section 7 apply?	Yes ☒ No ☐	<u>Species at Risk:</u> The treatment area does not include any publicly available or masked-secured areas designated provincially as habitat for species and/or ecosystems at risk. <u>Regionally Important Wildlife:</u> The treatment area does not include any areas designated for regionally important wildlife. <u>Critical Habitat for Federally Listed Species at Risk:</u> The treatment area does not include any land designated as proposed or finalized critical habitat for a federally listed species at risk.
OBJECTIVES SET BY GOVERNMENT FOR BIODIVERSITY OBJECTIVES (Landscape Level) - FPPR Part 4 Division 5		
Does the proposed treatment area include areas to which objectives for landscape level biodiversity under FPPR section 9 apply?	Yes ☐ No ☒	-*Maximum cutblock size* does not apply to this treatment area. The treatment area is well under 40 hectares, timber harvesting is not an objective, and proposed treatments will largely mimic the effect of a natural disturbance (i.e., low-severity fire event). -*Harvesting adjacent to another cutblock* does not apply to this treatment area.
OBJECTIVES SET BY GOVERNMENT FOR BIODIVERSITY OBJECTIVES (Stand Level) - FPPR Part 4 Division 5		

Are considerations for maintaining stand structure (wildlife trees, wildlife tree reserves, etc.), coarse woody debris, and maintaining tree and vegetation species composition incorporated into this prescription?	Yes ☒ No ☐	-*Wildlife tree retention* will be prioritized and managed for at the stand level, as no untouched wildlife tree retention areas have been delineated. See WILDLIFE TREE RETENTION TARGET for additional information. -*Coarse woody debris* retention (and recruitment) will be prioritized and managed for at the stand level, and amounts will greatly exceed (intentionally) the minimums proposed in FPPR and/or the Chief Foresters Guidance on Coarse Woody Debris. See COARSE WOODY DEBRIS (CWD) RETENTION TARGET for additional information.
RECREATION FEATURES - FRPA section 56 and 149, FPPR section 70		
Does the proposed treatment area contain interpretive sites, recreation trails, recreation sites, recreation facilities that are of significant recreation value and are designated a resource feature?	Yes ☐ No ☒	No provincially designated recreation trails, sites, or facilities are located within the treatment area.
VISUAL QUALITY OBJECTIVES - GAR section 7, FRPA sections 180 and 181, FPPR section 9.2		
Is the proposed treatment within a scenic area?	Yes ☐ No ☒	The proposed treatment area is not within a scenic area nor does it have an established visual quality objective. Visual quality of the site will not be affected due to high retention of overstory trees.
ARCHAEOLOGICAL RESOURCES/CULTURAL HERITAGE RESOURCES - FPPR section 10		
Are there any known archaeological sites or cultural heritage resources that are important to First Nations within the proposed area? No Referral to Land Manager is required if proposed TU is on the applicant's own First Nation Land.	Yes ☐ No ☒	According to the Provincial Archaeology Branch, there are no known archaeological sites recorded within 100 m of the treatment area, and archaeological potential modelling is not currently available to the Province that describes the potential for previously unidentified archaeological sites to occur in this area. The Arch Branch does not identify a need for an archaeology study or any Provincial heritage permits at this time. If archaeological material is encountered during development, all individuals involved with implementing this FMP **must stop all activities immediately** and contact the Arch Branch for direction at 250-953-3334.
INVASIVE PLANTS - FRPA section 47 and FPPR section 17		
Is the introduction and spread of invasive plants likely as a result of the proposed treatment?	Yes ☒ No ☐	No invasive plant sites have been identified within and adjacent to the treatment area through the Invasive Alien Plant Program (IAPP) database. During field work, the following species were noted (and are common throughout disturbed forests in this area). • Himalayan blackberry (*Rubus armeniacus*) Operations should minimize the spread of invasive plants through the following measures: • Clean clothing, boots, and equipment thoroughly when entering and exiting the treatment area. Wash in designated wash sites and prevent run-off from entering waterways or riparian areas. • Avoid driving through, parking on, or walking through weed infestations. • Burn piles should be effectively scarified/raked and covered with adjacent materials from the undisturbed forest floor. At the discretion of the contract manager, burn piles may be reseeded with a City of Coquitlam approved seed mix. • Ensure crews are aware of the importance of invasive species management and can identify all the common invasive species in the region. https://bcinvasives.ca/wp-content/uploads/2021/02/Field_guide_to_Noxious_Weeds_11th_2021.pdf

		Though the presence of invasive species can present a fire hazard if dense decadent material is able to accumulate, the removal of this vegetation is outside the scope of this FMP. Removing blackberry (from a fire hazard and ecological standpoint) is a recommended action for the City to pursue, but will require a more focused and intensive management regime than this FMP addresses.
NATURAL RANGE BARRIERS - FRPA section 48, FPPR section 18		
Are there natural range barriers within the proposed treatment area that are likely to be removed or rendered ineffective?	Yes ☐ No ☒	There are no natural range barriers within the proposed treatment area.
LAND USE OBJECTIVES (Higher Level Plans and objectives set by Government under the *Land Act*)		
Are there land use objectives (higher level plans or objectives under the *Land Act*) that apply to the proposed treatment area or a Road Permit necessary to provide access to the treatment area?	Yes ☐ No ☒	No land use plan or higher-level plan applies to the treatment area, nor is a road permit necessary to provide access to the treatment area.
Do the proposed activities conflict with land use objectives (higher level plans or objectives under the *Land Act*)?	Yes ☐ No ☒	The proposed activities do not conflict with any land use objectives.
Known and potential species at risk, windthrow hazard, and old growth management areas	Yes ☐ No ☒	Species at risk have been addressed above. A windthrow field card was not completed for the treatment area, though the proposed treatment (i.e., thin from below, retaining veterans, retaining healthy dominants, removing snags, and selecting for windfirm species [Fd]) will not increase windthrow risk in the area. Endemic windthrow/breakage was noted throughout the TU, but was concentrated on dead standing trees. No old growth management areas (legal or non-legal) overlap the treatment area.

G. OTHER CONSIDERATIONS AND REQUIREMENTS		
ENGAGEMENT AND CONSULTATION – FIRST NATIONS		
First Nations consultation complete?	Yes ☐ No ☒	Any comments received after finalization may incorporated into the prescription as an amendment.
Musqueam Nation		An introductory message and map of the project area was sent April 29, 2024, describing the fuel management objectives of the project.
Tsleil-Waututh Nation		An introductory message and map of the project area was sent April 29, 2024, describing the fuel management objectives of the project.
People of the Rivers Referrals Office		An introductory message and map of the project area was sent April 29, 2024, describing the fuel management objectives of the project.

Katzie First Nation	An introductory message and map of the project area was sent April 29, 2024, describing the fuel management objectives of the project.
Kwikwetlem First Nation	Kwikwetlem First Nation referrals staff attended a Community FireSmart & Resiliency Committee in April 2023 introducing the project. Prescription 'summaries' (abbreviated descriptions of proposed works, in non-technical language) were shared in October 2023 and March 2024. Draft prescriptions were shared April 29, 2024.
Squamish Nation	An introductory message and map of the project area was sent April 29, 2024, describing the fuel management objectives of the project.

CONSULTATION – GENERAL

An introduction to this project was provided at the City of Coquitlam's Community FireSmart & Resiliency Committee meeting in April 2023 to summarize prescription objectives, strategies, and methods. Representatives from the following organizations were present at the meeting: City of Coquitlam (Development & Planning, Parks, Fire Rescue Service); Metro Vancouver Regional District (Water Services, Parks); and Kwikwetlem First Nation.

EXISTING TENURE HOLDERS (Forest, Range, Guide Outfitters, Trappers, etc.)

Tenure Holder	Concerns?	Measures proposed to address licensee's assets / concerns
No tenure holders overlap this treatment area.	Yes ☐ No ☒	-

PRIVATE PROPERTY		
Does private property border the proposed treatment area?	Yes ☐ No ☒	Private property borders the treatment area to the south and west, and fence-lines were used in these areas to delineate treatment boundaries. Adjacent property owners should be notified by the City of proposed works a minimum of 14 days prior to startup.
SMOKE MANAGEMENT		
Does a smoke management plan beyond OBSCR exist for the proposed treatment area?	Yes ☐ No ☒	Metro Vancouver's Air Quality Management Bylaw No. 1082 applies to the treatment area, in addition to the OBSCR. As an approved plan for Community Wildfire Risk Reduction, burning may occur under Division 2 of OBSCR, but the permitting process required by Metro Van carries heightened restrictions for any open burning. Additionally, open burning is restricted in > 90% of the treatment area as it is within 50 m of a residential structure (under OBSCR). Debris disposal methods alternative to pile burning should be explored.
SAFETY		
Have any specific safety concerns been identified in or adjacent to the proposed treatment area?	Yes ☐ No ☒	Mortality within the stand presents a hazard to workers, which will be dealt with appropriately through a WDTA / DTF. Several residents adjacent to the area have also dumped material inside the treatment area, which can increase the fire hazard if there is an accumulation of combustible materials. Removing this material is outside the scope of this FMP, but is a recommended action by the City / property owners.
UTILITIES & INFRASTRUCTURE		
Are utilities or infrastructure located in or adjacent to the proposed treatment area? i.e. power lines, rail lines, etc.	Yes ☒ No ☐	City of Coquitlam water infrastructure (reservoir and associated buildings surrounded by a chain link fence) is found at the south end of the treatment area. Though this area may be used for access / staging, no damage to any of this infrastructure should occur. The northern edge of

		the treatment area is within ~15 m of a BC Hydro transmission line, which may result in the removal of identified snags coming within the limits of approach (LOA) of these lines. If this is a reality then a site visit should be staged with BC Hydro prior to work occurring to ensure that no vegetation to be removed will affect these lines. Any vegetation within the LOA will need to be felled by a certified utilities arborist.
ACCESS CONTROL		
Are there any foreseen issues with access and access control during and post treatment?	Yes ☒ No ☐	Access to the unit will be difficult as the primary means of access is direct from Eagle Mountain Drive, with a steep grassy slope ~3 m long up from the ditch-line. At the top of the slope where the stand begins there is a dense hedge of vegetation which would likely need to be cut through in order to gain better access into the unit. The reservoir is also fenced and vegetation extends to the fence. Contractors could discuss the potential of removing a portion of the fence around the reservoir, in order to stage equipment on the flat paved area around the reservoir. This would also provide access directly to the stand. Any access to the reservoir compound will need to be coordinated with the City.
TRAFFIC CONTROL		
Is traffic control required at any point during operations?	Yes ☒ No ☐	Traffic control may be required along Eagle Mountain Drive when any falling is occurring that may impact the road, or if debris is being loaded and hauled away from the road. Traffic control should be discussed with and approved by the City, and any necessary permits from MOTI (or equivalent) will need to be obtained.
OTHER (E.g Public Notification)		

H. FUEL LOADING AND TREATMENT SPECIFICATIONS

Fuel Treatment Unit ID: TU 1

H.1 TREATMENT SPECIFICATIONS SUMMARY

FUEL REMOVAL/RETENTION STRATEGY BY SIZE/SPECIES

- Fall all dead standing trees < 17.5 cm DBH
- Fall all hazard trees > 17.5 cm DBH (as identified by a qualified assessor through a WDTA), unless identified as a high-value wildlife tree;
- Remove all conifer trees < 12.5 cm DBH where they cannot be spaced at least 3 m (branch-to-branch) from one another. Priorities for retention should be the healthiest and most vigorous trees, with priorities in the following order: Fd, Cw, Hw.
- Retain all live deciduous trees and shrubs;
- Prune any retained conifers that are ≥ 5 m in height to 2 m;
- Prune any retained conifers that are ≤ 5 m in height to 1 m;

TREATMENT SPECIFICATION RATIONALE

- The majority of dead standing trees are low-habitat quality (i.e., small) conifer trees, and/or hazard trees. Left to fall on their own, these trees can create elevated piles of surface fuels which provides vertical continuity to any conifer crowns surrounding them, and/or present a hazard to adjacent infrastructure or people;
- Cutting specifications of live standing trees will ensure that a diverse structure (both size and species) of healthy trees is retained. These specifications will greatly reduce the ladder fuel layer and break up the horizontal and vertical continuity in the stand;

- Pruning conifer trees will ensure that there is not vertical continuity between surface fuels (i.e., fine woody debris) and tree crowns – see Appendix E for additional information. Pruning trees shorter than 5 m leaves potential for more than 40% of the live crown : height ratio to be removed, which will unnecessarily affect the tree's vigour. Very few conifer trees that are ≤ 5 m in height will be retained (estimated at < 50 SPH and often in isolated clumps, covering < 1 % of the stand overall), so the potential of these trees candling is not a concern at the stand level.
- Surface fuel removal (as specific below) will ensure that the likelihood of crown fire initiation is reduced and that the hazardous burning potential of piled accumulations is eliminated. A lop and scatter approach is not prescribed in this stand due to the adjacency to critical infrastructure and residential properties. Retention of LWD and CWD will allow contractors to retain boles of larger felled trees and pre-existing deadfall, which are the most difficult pieces to physically remove or burn and which create the most soil disturbance when burnt.

H.2 STAND FUEL LOADING

Complete a STAND and STOCK TABLE (SST) appendix for each FTU. The SST(s) must be attached to this document. A professional volume estimate is required when merchantable tree cutting is prescribed and a timber cruise should be considered when cutting >50 m^3/ha or >500 m^3 in total.

Is the cutting of standing trees prescribed?

☒ Yes

☐ No

Comments:

The majority of standing trees to be cut are merchantable and understandable sized snags (which will be retained on site as CWD) and unmerchantable understory conifers. No utilization of merchantable or non-merchantable material is proposed due to small volumes and quality of material.

STAND AND STOCK TABLE SUMMARY (copied from Stand and Stock Tables in Appendix)

Layer Info	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	0 - 11	20 - 31	226	100	126	94	0	94
Total All Species Layer 2	0 (Cw)	6	100	100	0	-	-	-
Total All Species Layer 3	0 (Cw)	4	50	50	0	-	-	-
Total All Species Layer 4	-	-	-	-	-	-	-	-
TOTAL ALL LAYERS (from Stand and Stock Table appendix)	-	-	376	250	126	94	0	94

H.3 SURFACE FUEL LOADING (kg/m2)

Size Class (cm)	Existing	Existing Distribution	Target (kg/m^2)	Target Distribution	Methodology Used
Fine Woody Debris (</=7cm)	0.72 – 2.0 kg/m^2	Scattered on average, in accumulations associated with blowdown / breakage.	0.5 kg/m^2 [3, 4]	Scattered	Browns Transect & USFS Photoload Technique
Large Diameter Woody Debris (>7cm – </= 20cm)	5 – 44 t/ha	Scattered, often in elevated jackpots.	Retain all.	See COARSE WOODY DEBRIS (CWD)	

[3] Target on average. Intent is to have all FWD removed that is introduced through treatment, and have all pre-existing accumulations abated. No accumulations to exceed 1.0 kg/m^2 in any 1m x 1m area.

[4] For short (i.e., < 5 m tall) conifers that are retained and only pruned to 1 m in height, FWD must be abated to < 0.3 kg/m^2 within 1.5 m of any point where the CBH is < 2 m.

**Coarse Woody Debris (CWD) (20cm+)	8.6 t/ha			RETENTION TARGET	

H.4 CROWN CLOSURE AND CANOPY BULK DENSITY		
Crown Closure (%)	Existing: (Dead / Live) 50 – 60% (20 – 35% contribution from conifer)	Target: 50 - 60% (A reduction in crown closure is not a driving objective of this prescription. Small decreases will likely occur where snags are removed)
Canopy Bulk Density (CBD)	CBD was not measured but will be minimally affected by the proposed treatments. Decreases will occur in sub-canopy layers as clumps of understory conifer trees are thinned, and minor decreases will occur in the overstory where canopy snags are felled.	

H.5 BIODIVERSITY AND FOREST HEALTH CONSIDERATIONS AND TARGETS	
**COARSE WOODY DEBRIS (CWD) RETENTION TARGET - Pieces / ha and Distribution	All CWD and LWD that is pre-existing and/or introduced should be retained. Minor amounts of LWD can be removed at the contractors discretion to facilitate debris removal. It is expected that the total amount of LWD and CWD will not exceed 50 t/ha on average, which is an acceptable amount to balance fire hazard, potential soil heating, site productivity, and wildlife characteristics. All retained LWD and CWD should be bucked and limbed so that the: • Fine woody components (i.e., branches / tops) are removed (flush with the bole); • Majority of the piece is in contact with the ground; • Piece is kept in the longest continuous piece.
WILDLIFE TREE RETENTION TARGET – describe specific wildlife tree features to protect, sph, geographic preferences etc.	Prior to or concurrently with treatment, a Wildlife Danger Tree Assessment should be performed by a qualified assessor. All trees that exhibit high-value wildlife characteristics given this ecosystem should be retained, unless they pose an immediate safety risk to workers and/or the public. If no work zones (NWZ) are established, these need to be identified to and approved by the contract supervisor to confirm that they do not unduly compromise the risk-reduction efforts. No more than 5% of the TU should be designated as NWZs.
FOREST HEALTH- Should include details such as agent, affected species, incidence rating, mortality, and targets	Multiple forest health agents in the surrounding area have been noted through provincial surveys and during field work, most notably western hemlock looper (IDL), which has combined with hemlock dwarf mistletoe (DMH) to cause poor health and mortality in much of the Hw in this stand. Minor amounts of flagging in cedar trees was also observed which can likely be attributed to multiple years of drought conditions. Treatment specifications have been chosen to remove the majority of dead and damaged looper trees, while retaining and promoting healthy individuals of a diversity of species.

I. TREATMENT DESCRIPTION

MERCHANTABLE TIMBER CUTTING

ROADS, LANDINGS AND TRAILS (e.g., will new road construction be required, is there existing roads that will be utilized?):
No new road construction will be required, and there is no reliable road access directly into the treatment area.

FELLING (e.g., is there special measures required for felling, hand falling areas, etc.):
Any hand falling of timber >15 cm diameter at stump height (30 cm) shall be performed in line with WorkSafeBC Faller Certification standards. Stump heights should not exceed 10 cm in height on the high-side for stems < 12.5 cm in diameter, and 30 cm in height for stems larger than this. All stumps should be cut at 0° (not parallel to the slope).

YARDING/SKIDDING (e.g., is there specific yarding areas identified, is forwarding preferred over skidding due to sensitive soils in some areas etc.): Yarding or skidding of material is not recommended due to the small volume of material to be cut and removed.
PROCESSING, LOADING AND HAULING (e.g., are there specific areas identified regarding where these activities may occur?): Loading and hauling of non-merchantable debris is likely to occur, and will likely be performed roadside along Eagle Mountain Drive.
SLASH DISPOSAL (e.g., is there a recommended slash disposal method?): N/A.
SPECIAL MEASURES: N/A
STAND MODIFICATION TREATMENTS
BRUSHING: The retention of all healthy deciduous trees and shrubs is an objective of this prescription. These should only be targeted for brushing as required for any safe falling procedures.
PRUNING: Any retained conifers that are greater than 5 m in height that have a CBH lower than 2 m will be pruned to 2 m. Any retained conifers that are less than 5 m in height will be pruned to 1 m. CBH will be measured as the distance between the ground and the lowest point on either a live branch or a cluster of dead branches (especially with needles and fine branches or volatile mosses or lichens) dense enough to allow fire to spread vertically to the crown. For deciduous trees / shrubs with a heavy amount of decadent stems / branches at the base or in the lower canopy, these dead portions should be pruned. Pruning should be within 1 cm of the branch collar and should not result in damage to the stem.
THINNING: Estimated cutting specifications are outlined in Table H and in Appendix D.
DEBRIS PILING: Debris may only be piled within the treatment area for the purpose of pile burning or for facilitating removal.
PILE BURNING: Pile burning is not a recommended or overly realistic debris disposal option for this site, due to the adjacency to private properties and bylaw restrictions. If pile burning is chosen (and performed in compliance with OBSCR Division 2 and Metro Vancouver's Air Quality Management Bylaw No. 1082), activities should consider the following parameters: • Burn piles must be constructed to facilitate effective ignition and complete combustion. • Burn piles must be within the treatment area boundary. • Burn piles should be placed to avoid scorching any retained pieces of CWD or retained boles. It is the Prime Contractor and contract supervisor's responsibility to obtain all required permits and burn registration numbers from Metro Vancouver, Coquitlam, and the BCWS, and complete notifications as per OBSCR requirements, including but not limited to: adjacent property owners and the CFRS.
MULCHING: Mulching / chipping can be utilized to facilitate debris removal, but mulched / chipped material cannot be broadcast on site. A minor amount of mulched / chipped material can be retained in isolated areas (no larger than 10 m x 10 m, not exceeding 10 cm in depth, and not covering more than 10% of the treatment area).
MASTICATION: See mulching above.
GRINDING: See mulching above.
PRESCRIBED FIRE: Fuel reduction targets will need to be achieved without the use of prescribed fire. The adjacency to critical infrastructure and private residences, as well as the wet forest type (CWH dm) and predominant herb/shrub layer make this site unsuitable for prescribed fire pre or post-treatment.
PLANTING: Planting is not prescribed or required as this is private land, and the post-treatment stand will still be effectively stocked and this stand should be managed in the long-term for continued fire resilience.
OTHER:
AUTHORIZATION AND TIMBER TENURE REQUIREMENTS (To be populated in consultation with the land manager. E.g., BC Parks, Natural Resource District, Mountain Resorts Branch etc.)
FRPA Section 52: Not required as this treatment is on municipal land.
Forestry License to Cut (FLTC): Not required as this treatment is on municipal land.

Park Use Permit: Not required as this treatment is on municipal land.
Road Permit or Road Use Permit: A Highway Use – Works permit may be required through MOTI if traffic control will be utilized along the roadway for tree felling and/or debris removal.
Other (i.e., local government, utilities, etc.): Access to the reservoir area for staging should be coordinated with the City of Coquitlam.

J. POST TREATMENT

EXPECTED VEGETATION RESPONSE BY FTU:

TU1: Where deadfall is cleaned up and slight decreases in canopy closure occur from snag or understory conifer removal, the increased insolation will likely provide the herb / shrub layer with improved growing conditions. It is expected that a mix of conifer species will continue to naturally regenerate, though little natural understory regeneration was observed pre-treatment.

ADDITIONAL MONITORING AND MAINTENANCE:

Planned / Scheduled Monitoring & Maintenance:

Time Post Treatment (months / years)	Activity / Treatment:	FTU(s):	Comments:
10 – 15 Years (or post-disturbance)	Maintenance treatments	TU 1	Maintenance treatments to keep these parcels in a low-hazard state will likely be required due to natural stand processes. See below for potential triggers for maintenance treatments.

Triggers For Maintenance Treatments:

Conifer Regeneration: Regeneration of > 200 SPH of conifer trees that are > 1.5 m in height. Healthy regenerating conifers (likely Fd and Cw) that were retained through this prescription should not count toward this target.

Snags & Hazard Trees: Natural succession or forest health events that result in > 10% of overstory trees being dead.

Surface Fuels: Accumulations that exceed the prescription specifications in an area ≥ 10 m x 10 m

SILVICULTURE OBLIGATIONS: Do silvicultural obligations apply to the treatment area? Yes ☐ **No** ☐

PLANTING: Is planting a treatment identified in this prescription or required as a legislative obligation? Yes ☐ **No** ☐

STOCKING STANDARDS: N/A

FTU	Stocking Standard ID	Pref. Spp.	Acc. Spp.	Well-Spaced Stem/ha				Minimum Height (m)			Regen Delay	Free Growing (years)
				TSS	MSS Pref. & Acc.	MSS Pref.	MITD	Pl	Others	RTH (%)		

K. Outstanding Works

Prior to implementation, the following notifications should occur:

1. First Nations
2. City of Coquitlam
3. Coquitlam Fire & Rescue Services
4. Adjacent property owners

The consultation process should be undertaken by Coquitlam or representative. Consultation / notification shall be completed in a manner and a schedule determined by Coquitlam (recommended timeline is 14 days prior to start-up), but may consist of email or phone notifications, contacting individual households, onsite signage, notification through websites or social media, and/or holding a general public meeting. Prescription specifications may be modified based upon received feedback; any modifications must be formalized as a prescription amendment signed by a qualified RPF to ensure that modifications do not compromise treatment objectives or negatively impact other values (unintended consequences).

At the time of writing, First Nations Information Sharing has not adequately occurred and should take place prior to FMP finalization and treatment implementation.

A site visit may need to be coordinated with BC Hydro personnel if there is the potential for felled trees to be within the limits of

approach of the hydro transmission line to the north of the treatment area.

L. ADMINISTRATION

PREPARATION

QUALIFIED REGISTERED PROFESSIONAL NAME *(Printed)*	QUALIFIED REGISTERED PROFESSIONAL SIGNATURE
PROFESSIONAL ASSOCIATION & MEMBER NUMBER	DATE

M. ATTACHMENTS

MAPS: **Yes ☐** No ☐	FIELD DATA CARDS: Yes ☐ **No ☐** Data collected during field work and summarized by each TU – original data is not presented with this FMP.
WUI WTA Plots and Photos: Yes ☐ **No ☐** Representative WTA plots completed but not attached to this FMP.	CRUISE DATA: Yes ☐ **No ☐**
AIR PHOTOS/IMAGERY: Yes ☐ **No ☐**	BURN PLAN: Yes ☐ **No ☐**
MODELING/DATA ANALYSIS: Yes ☐ **No ☐**	STAND & STOCK TABLES: **Yes ☐** No ☐
SURFACE FUEL LOADING DATA: Yes ☐ No ☐ Data collected during field work and summarized by each TU – original data is not presented with this FMP.	OTHER:
TERRAIN STABILITY ASSESSMENT Yes ☐ **No ☐** Completed By: Date:	VISUAL IMPACT ASSESSMENT Yes ☐ **No ☐** Completed By: Date:
ARCHAEOLOGY IMPACT ASSESSMENT Yes ☐ **No ☒** Completed By: Date:	BIOLOGIST ASSESSMENT Yes ☐ **No ☐** Completed By: Date:
ADDITIONAL COMMENTS:	

Appendix A: Representative Photos

Figure 1: Representative photos displaying deadfall and a lack of ladder fuels (top left), accumulations of deadfall (top right), and low drooping Cw trees (bottom).

Appendix B: Map

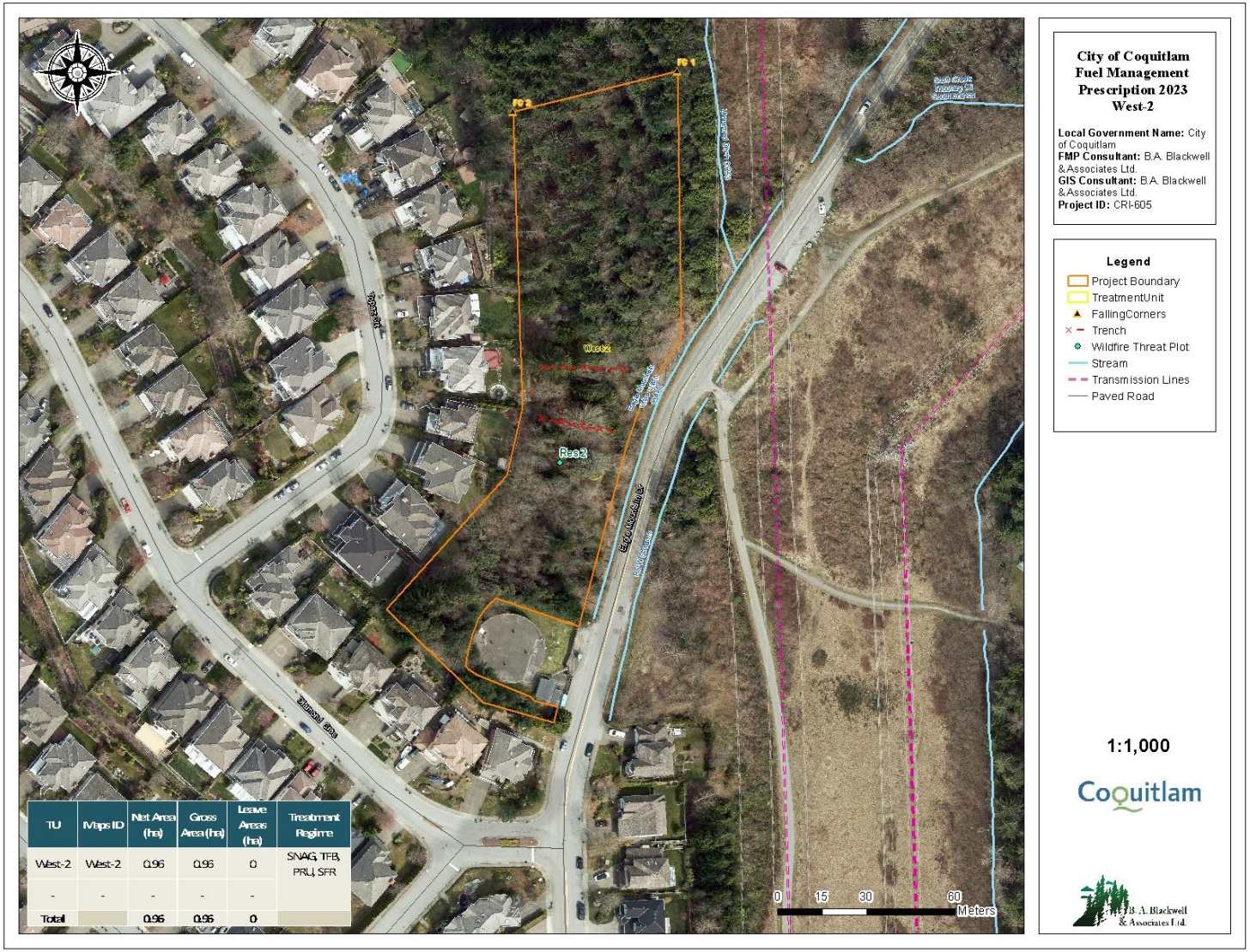

Figure 2: Treatment area map of West-2, showing the municipal water reservoir at the south end of the unit.

Appendix D: Stand and Stock Tables

Project ID: Coquitlam FMPs 2023 – West 2

Treatment Unit ID: West-2

H. STAND AND STOCK TABLE

Complete a STAND and STOCK TABLE (SST) appendix for each FTU. The SST(s) must be attached to this document. A professional volume estimate is required when merchantable tree cutting is prescribed and a timber cruise should be considered when cutting >50 m^3/ha or >500 m^3 in total.

Is the cutting of standing trees prescribed?

☒ Yes

☐ No

Comments:

The majority of standing trees to be cut are merchantable and understandable sized snags (which will be retained on site as CWD) and unmerchantable understory conifers. No utilization of merchantable or non-merchantable material is proposed due to small volumes and quality of material.

Are there any challenges to utilizing merchantable material? If yes, please provide details.

☐ Yes

☒No

Comments: No merchantable material that is not dead standing will be cut. Volumes of dead standing to be cut are small and CWD retention is being prioritized.

Species and Diameter Class	Crown Base Height Range (m)	Average Age / Tree Height (m)	STEMS PER HECTARE (sph)			VOLUME PER HECTARE (m^3/ha)		
			Existing	Cut	Leave	Existing	Cut	Leave
Layer 1 (≥ 17.5 cm dbh)								
Cw	0	20	53	0	53	39	0	39
Hw	12.2	31	16	0	16	33	0	33
Mb	-	22	7	0	7	22	0	22
Total Dead Potential	*None captured in plots. Hazard trees with low habitat quality should be felled.							
Total Live	-	-	76	0	76	94	0	94
Layer 1 (12.5 cm – 17.5 cm dbh)								
Deciduous	-	-	50	0	50	-	-	-
Total Dead	-	-	100	100	0	-	-	-
Total Conifers & Dead	-	-	100	100	0	-	-	-
Layer 2 (≥ 7.5cm - 12.5cm dbh)								
Total Dead	-	6	100	100	0	-	-	-
Layer 3 (>1.3m Height and <7.5cm dbh)								
Total Dead	-	4	50	50	0	-	-	-
Layer 4 (<1.3m Height)								
None captured in plots. All layer 4 conifer trees > 30 cm in height should be removed.								
Total Live & Dead (Layer 1)	-	-	226	100	126	-	-	-
Total Conifers & Dead (Layer 2)	-	-	100	100	0	-	-	-
Total Conifers & Dead (Layer 3)	-	-	50	50	0	-	-	-

Total Conifers & Dead (Layer 4)	-	-	-	-	-	-	-	-
TOTAL ALL LAYERS	-	-	376	250	126	-	-	-

Appendix E: Fire Behaviour Calculations

Project: City of Coquitlam FMPs (2023)		Pre-treatment	Post-treatment spec.
TU(s): West-2	Weight of fuel (kg/m²):	0.7 - 2.0 kg/m2	0.5 kg/m2 (avg)
Weather Station: UBC Research	Rate of Spread (m/min):	2 m/min (Red Bk)	1.3 m/min (FBP Agg)
90th Percentile BUI: 105.92	Wildfire Intensity (kW/m):	Rank 3, 500 - 2000	Surface, 195 kW/m
90th Percentile ISI: 6.19	Crown Base Height (CBH) (m):[1]	0 m (Cw)	2.0 m
CFFBPS Fuel Type: M-1/2 (Max 50%, using 25)	ritical Surface Intensity (kW/m):	0 kW/m	448 kW/m

[1]CBH - refer to Fuel Management Prescription Guidance for CBH measurement direction

Surface Fire Intensity Targets		
Is Wildfire Intensity below 2000 kW/m?	Yes	← These boxes auto populate when Wildfire Intensity and CSI values are input into their respective boxes.
Is Wildfire Intensity less than CSI?	Yes	←

Project: City of Coquitlam FMPs (2023)		Pre-treatment	Post-treatment spec.
TU(s): West-2	Weight of fuel (kg/m²):	0.7 - 2.0 kg/m2	0.3 kg/m2 (avg)
Weather Station: UBC Research	Rate of Spread (m/min):	2 m/min (Red Bk)	1.3 m/min (FBP Agg)
90th Percentile BUI: 105.92	Wildfire Intensity (kW/m):	Rank 3, 500 - 2000	Surface, 117 kW/m
90th Percentile ISI: 6.19	Crown Base Height (CBH) (m):[1]	0 m (Cw)	1.0 m
CFFBPS Fuel Type: M-1/2 (Max 50%, using 25)	ritical Surface Intensity (kW/m):	0 kW/m	158.6

[1]CBH - refer to Fuel Management Prescription Guidance for CBH measurement direction

Surface Fire Intensity Targets		
Is Wildfire Intensity below 2000 kW/m?	Yes	← These boxes auto populate when Wildfire Intensity and CSI values are input into their respective boxes.
Is Wildfire Intensity less than CSI?	Yes	←

Figure 3: Screencap from BCWS' critical surface fire intensity "calculator", showing expected pre-treatment and post-treatment fire behaviour (under 90th percentile conditions) for areas with 0.5 kg/m² of fine woody debris (top) and 0.3 kg/m² of fine woody debris (bottom).

The above figure shows how pre-treatment conditions (with the stand being defined as a M-1/2 25% fuel type[5]) would likely result in a Rank 3 surface fire (using the FBP red book, given 90th percentile weather conditions). As this area is highly urbanized / disturbed, there are multiple factors that would lead the stand to experience intermittent crowning, given low crown-base heights and accumulations of deadfall. Post-treatment FWD targets have been paired with post-treatment CBHs in order to result in an expected surface fire intensity that is below the critical surface fire intensity. FWD amounts averaging 0.5 kg/m² will be permitted where CBHs are 2.0 m or greater, but where the CBH is less than 2.0 m then FWD will need to be abated to 0.3 kg/m² within 1.5 m.

[5] Though the stand was typed as M-1/2 50% in the field, the conifer component (Cw / Hw) is not as volatile or vertically continuous as boreal white / black spruce, which define the M-1/2 type. By professional opinion from a fire behaviour standpoint the stand is more representative of a M-1/2 25% [and/or C-5]), pre-treatment.