DISTRICT OF MACKENZIE

REQUEST FOR PROPOSAL

2025 Wildfire Fuel Reduction Treatment

Issue Date: April 10, 2025
Closing Date: 4:00pm May 14, 2025

District of Mackenzie
Bag 340
Mackenzie, B.C. V0J 2C0

Table of Contents

Introduction

The District invites qualified and experienced firms to submit a proposal for operational wildfire fuel reduction treatments to achieve the targets and objectives of the "District of Mackenzie Fuel Management Prescription 2020" (ATTACHMENT 1). Proponents are invited to submit proposals as per the requirements of this request. All aspects of the FMP must be adhered to.

The District is not necessarily interested in obtaining the lowest price for this work. The quality of the service, relevant experience, schedule, methodology, equipment and resources to be used, safety, use of local resources, recovery of fibre, and other factors will be taken into consideration in the evaluation of proposals received. Award of this contract is subject to tenure and funding approval.

Due to the FMP being developed in 2020, a site viewing is mandatory to ensure Proponents are familiar with the site conditions and access, as well as identify any increase in fuel load that may not have been present at the time of FMP development.

Definitions

The following terms will apply to all Proposals related to this Request for Proposal.

1.1. "Contract" means the written agreement resulting from this Request for Proposal, if any, in accordance with this Request for Proposal.

1.2. "Proponent" means the person submitting a proposal.

1.3. "Proposal" means a submission in response to this Request for Proposals.

1.4. "RFP" means this Request for Proposal.

1.5. "FMP" means the District of Mackenzie Fuel Management Prescription, District of Mackenzie Fuel Management Prescription 2020.

1.6. "TU" means Treatment Unit.

1.7. "the District" means the District of Mackenzie.

1.8. "FSC" means Fire Smart Coordinator.

1.9. "MWAC" means Mackenzie Wildfire Advisory Committee.

1.10. "CWRP" means Community Wildfire Resiliency Plan.

1.11. "must", "shall" or "mandatory" means a requirement that must be met in order for the proposal to receive consideration.

1.12. "should" or "desirable" means a requirement having a significant degree of importance to the objective of the request for proposals, but which the District would strongly prefer to be fulfilled, and which the District may in its sole discretion elect to treat the failure to fulfill as a grounds for rejection of a Proposal.

Project Description

Purpose and Objectives

The purpose of this project is to carry out operational fuel treatment activities as prescribed in the FMP developed for the District of Mackenzie in TU #1 (MECH), TU#2 (MECH) & TU#3 (MAN). (see maps in ATTACHMENT 2). Under the guidance of the District FSC and project Forest Professional, the successful proponent will be responsible for all aspects necessary to carry out all phases of the treatment as per the FMP, including but not limited to the following:

a. Cutting and removal of trees prescribed for removal.
b. Pruning of trees intended to be retained, bucking, chipping, and removal of debris.
c. Management of debris created during operations. Burning of debris must follow the FMP guidelines in the section "Debris Disposal-Burning and Smoke".
d. Provide access to the TU sufficient to carry out treatment and removal of fibre generated from the treatment activities.
e. Take the necessary measures to comply with the guidelines for operating near highways, powerlines and pipelines.
f. Possibly require a Certified Utility Arborist present on site while working near powerlines.
g. Develop a traffic management plan for operating along residential roads. Control of vehicle (car, ATV, motor bike, etc) traffic in and around the vicinity of fuel treatment operations, as well as pedestrian trail control on recreational paths that may fall in or near the treatment area.

Where mechanical treatments are used Proponents will have to consider site conditions, types of equipment and possibly season of treatment to protect the root systems of retained stems and soil properties. To successfully achieve the targets for fuel reduction it is expected that areas of mechanical treatment will also have a component of manual treatment associated with them.

Invoicing & Payments

Invoices for each TU will be submitted as follows:

a. The Proponent may submit invoices for areas where treatments are complete. Where treatments require two or more phases, as in the case of winter mechanical treatment with a secondary debris removal treatment in snow free conditions, invoicing will reflect the pricing for the particular phase.
b. Prior to invoicing the Proponent and Fire Smart Coordinator will assess and agree upon the completed areas.
c. Invoices will be accompanied by a map detailing the location of the completed areas, indicating the relevant completed phases including Quality Plot Data.
d. Proposals will indicate the pricing breakdown for separate phases per Treatment Unit to facilitate payment. Rates and payment process will be confirmed between the Proponent and the FSC prior to any works commencing on a TU.
e. All payments are subject to a 20% holdback to be paid out upon satisfactory completion of all phases of work per Treatment Unit.
f. This work is funded by the Union of British Columbia Municipalities and all completed work is subject to technical review and approval by the funding agency.
g. Revenue from all fibre sales must be reported to the District for funding reasons.

Insurance Requirements

The successful proponent must supply the following information prior to commencement of the contract:

a. A copy of the current Corporate Safety Manual.
b. Verification that the company is registered and in good standing with WorkSafeBC.
c. A copy of the company Commercial General Liability Insurance providing for an inclusive limit of not less than five million dollars ($5,000,000) and must be willing to name the District of Mackenzie as an additional insured.
d. Proof of Fire Fighting Expense Endorsement to the Commercial General Liability Insurance providing coverage not less than five million dollars ($5,000,000.00) during the fire season and coverage not less than five hundred thousand dollars ($500,000.00 outside fire season, after November 1 and before March 1).
e. A copy of Automobile Insurance providing third party liability coverage not less than two million dollars ($2,000,000.00) each occurrence, all-inclusive on owned, non-owned, or hired vehicles.
f. Proof of Safe Company Certification (BC Forest Safety Council).

Timeline

The following timeline is an estimate and may be adjusted at the District of Mackenzie' s discretion any time during this procurement process.

Distribution of RFP	**April 10, 2025**
Deadline for Questions Submitted by Email	**May 9, 2025**
RFP Submission Deadline	**May 14, 2025 at 4:00 pm**
Target Notification to Successful Proponent	**May 16, 2025**
Contract Completion Date	**November 6, 2026**

Proposals

a. The Proponent shall complete and submit the following documents with the Proposal submission:
   - Background information on Proponent including experience and qualifications in the industry, 3 references including contact information, and proof of SAFE Company certification.
   - Appendix A - Proponent Information and Agreement Form.
   - Detailed description of Proponent's Execution Plan including but not limited to operational methods, schedule, quality program, equipment to be used, fibre utilization plan, options to integrate local resources, measures to protect existing values.
   - Proposals will indicate the pricing separately for access and treatment.
   - Appendix B - Fixed Price Offer Plan.
   - Optional – Additional information relevant to the proposed methodology.

b. Prices must be quoted:
   - In Canadian dollars.
   - Inclusive of PST if applicable.
   - Goods and Services Tax (GST) should be shown as a separate line item.

Sub-Contracting

a. The Proponent should fully disclose all proposed subcontracting of any of the required services.

b. Using a sub-contractor is acceptable provided the Proponent remains the Prime Contractor. This includes a joint submission by two Proponents having no formal corporate links. However, in this case, one of these Proponents must be identified as the Prime Contractor and take overall

responsibility for successful completion of all phases of the project and this must be defined in the Proposal.

c. Sub-contracting to any firm or individual whose current or past corporate or other interests may, in the District's opinion give rise to a conflict of interest in connection with this project will not be permitted, and a Proposal may be rejected on this basis in the District's absolute and unfettered discretion. This includes, but is not limited to, any firm or individual involved in the preparation of this Request for Proposal.

Addenda & Questions

a. Proponents are advised that all subsequent information regarding this RFP, including any addenda, will be distributed on BCBid and on the District's webpage. Notification will not automatically be sent to all Proponents. It is the responsibility of all Proponents to check for addenda, which may be posted at any time up to closing time, prior to submitting their Proposal. All addenda should be acknowledged in the Proponent Information and Agreement Form.

b. To clarify any issues in this RFP, the District of Mackenzie will respond only to questions that are presented through e-mail. Questions should be submitted to the District's Fire Smart Coordinator **Micaiah Taylor** at firesmart@districtofmackenzie.ca Telephone questions will not be accepted.

c. All questions must be received by **May 9, 2025, 4:00 pm.**

d. All questions and answers will be in a Q&A document which will be posted on BCBid and on the District of Mackenzie website at www.districtofmackenzie.ca with the RFP documents on or after May 9, 2025. This will be the only distribution method for the Q&A documents.

e. The District reserves the right to seek clarification from the Proponent regarding a proposal, to assist in making evaluations. The Proponent should submit a name and telephone number of a person the District may contact regarding any questions or clarifications relating to the Proponent's submission to the Request for Proposals.

Submitting Your Proposal

Submission & Deadline

a. Proposal submissions should be titled "**2025 Wildfire Fuel Reduction Treatment Project**" in the subject line.
b. Completed Proposals must be received by email to:

Micaiah Taylor **Email:** firesmart@districtofmackenzie.ca
Fire Smart Coordinator

c. The deadline for receipt of complete Proposals is **4:00 pm Pacific Standard Time**, on **May 14, 2025**. Late Proposals will not be accepted and will be returned to the Proponent.

Proponent & District Responsibilities

a. It is the responsibility of Proponents to ensure compliance with all requirements and deadlines. It is the responsibility of Proponents to ensure delivery of all required response material. Proposals which are not in compliance with the RFP requirements may be rejected.

b. The District of Mackenzie assumes no responsibility for technological or logistical issues in delivering Proponent responses.

c. All costs of preparation and presentation associated with a response to this RFP will be the responsibility of the Proponent.

d. Proponents may be asked to make a presentation before the District if selected as a finalist.

e. The District reserves the right to enter into a contract with a Proponent for all, part, or none of the service or products that are the subject of this RFP.

f. Submission of a Proposal in response to this RFP indicates the Proponent's acceptance of the terms and conditions contained within the RFP.

g. Proponents who have obtained the RFP electronically must not alter any portion of the document, with the exception of adding the information requested. To do so will invalidate the Proposal.

Alternate Proposals & Changes to Proposal Wording

a. If an alternate solution is offered, the information should be submitted in a separate document.

b. The Proponent will not change the wording of their Proposal after closing and no words or comments will be added to the Proposal unless requested by the District of Mackenzie for purposes of clarification.

Conflict of Interest and Disclosure of Business Relationships

Any potential conflict of interest must be disclosed to the District. Proposals will not be evaluated if the Proponent's current or past corporate or other interests are, in the reasonable opinion of the District deemed or perceived to be a conflict of interest in connection with this RFP or the activities or mandate of the District.

a. All Proponents must make full disclosure of any of the following existing business relationships with any members of the District of Mackenzie Mayor and Council, District employees or immediate relatives of any members of the District's employees:

   - If a private company, details of ownership of shares by any of the above;
   - If a public company, details of ownership of shares, in excess of one percent (1%) to total shares by any of the above;
   - If a partnership, details of any partnership arrangement of any of the above;
   - Details of any direct or indirect pecuniary interest of any of the above in the supply of such goods and services.

b. Disclosure, if any, shall be made in writing at the time of submitting Proposals.

c. If the Proponent fails to disclose an interest and/or the interest is falsely or insufficiently reported, the District reserves the right to reject the Proposal in its absolute discretion.

Confidentiality

a. All Proponents and any other person who through this RFP process gains access to confidential financial information of the District are required to keep strictly confidential all information which in any way reveals confidential business, financial or investment details, programs, strategies or plans, learned through this RFP process. Information pertaining to the District obtained by the Proponent as a result of participation in this process is confidential and must not be disclosed without written authorization from the District.

b. The Proposal should clearly identify any information that is considered to be confidential or proprietary information (the "Confidential Information"). However, the District of Mackenzie is subject to the Freedom of Information and Protection of Privacy Act. As a result, while the Act offers some protection for third party business interests, the District of Mackenzie cannot guarantee that any Confidential Information provided to the District of Mackenzie can be held in confidence if a request for access is made under the Freedom of Information and Protection of Privacy Act.

Evaluating Proposals

a. Evaluation of Proposals will be by a Review Committee including the Fire Smart Coordinator, members of MWAC, and members of the District's Finance and Corporate Departments.

b. Awards will be based on the best value offered, and the best value will be determined by the District in its sole discretion. Evaluation criteria will be:

i. Proponent's offer, overall value, fixed price;
ii. Detail of execution plan demonstrating ability to meet specifications and schedule;
iii. Offer 3 References;
iv. Relevant Experience;
v. Potential for incorporating local resources, training and any value-added offerings;
vi. Fibre recovery plan.

TITLE	
EVALUATION CRITERIA	**WEIGHT**
Fixed Pricing	30
Execution Plan	20
References	10
Experience	10
Incorporating local resources	15
Fibre recovery plan	15

c. While previous experience with the District is not required and does not in any way confer an advantage, the District's previous experience with the Proponent may also be taken into consideration in its evaluation of Proposals. The District reserves the right to rely upon its records, references and recollection in this regard. The District may also obtain references other than those provided by the Proponent and may use these references in determining the best value.

d. By responding to this RFP, Proponents will be deemed to have agreed that the decision of the District will be final.

Communication with the District of Mackenzie

a. Only the Fire Smart Coordinator (or designate) is the District's representative authorized to communicate and otherwise deal with Proponents and all Proponents should communicate and otherwise deal with that person only. Contact with any other District representative, including Members of Council, officers or employees of the District regarding this RFP or a Proponent's submission may result in that Proposal being removed from consideration for this RFP. As stated above, all communication should be presented via email to the address stated above.

b. All Proponents who have submitted a Proposal will be notified of the Review Committee's decision after the final selection has been made. This notice of final selection may be the only communication between the District of Mackenzie and Proponents. Telephone or other inquiries concerning this Proposal after the Proposal deadline are discouraged.

Rejection & Acceptance of Proposals

No Obligation to Proceed

The District reserves the right to cancel this Request for Proposals at any time and for any reason, and will not be responsible for any loss, damage, cost or expense incurred or suffered by any Proponent as a result of that cancellation. The receipt by the District of any information (including any submissions, ideas, plans, drawings, models or other materials communicated or exhibited by any intended Proponent, or on its behalf) shall not impose any obligations on the District.

Acceptance and Rejection of Proposals

a. This Request for Proposal should not be construed as an agreement to purchase goods or services. The District is not bound to accept the lowest priced or any Proposal of those submitted. The District will be under no obligation to receive further information, whether written or oral, from any Proponent.

b. No act of the District, other than a notice in writing signed by the Chief Administrative Officer or the District's Director of Operations, shall constitute a Contract. Note that any acceptance may be subject to Council approval.

c. Neither acceptance of a Proposal nor execution of a Contract will constitute approval of any activity or development contemplated in any Proposal that requires any approval, permit or

license pursuant to any federal, provincial, regional district or municipal statute, regulation or bylaw.

d. The District's intent is to enter into a Contract with the Proponent who has submitted the best offer. The District reserves the right to accept any or none of the proposals submitted and will evaluate proposals based on the best value offered to the District and not necessarily the lowest price, using the criteria specified in this RFP. The District reserves the right in its sole unrestricted discretion to:

- Accept any Proposal which the District deems most advantageous to itself;
- Reject any and/or all irregularities in a Proposal submitted;
- Waive any defect or deficiency in a Proposal whether or not that defect or deficiency materially affects the Proposal and accept that Proposal;
- Reject any and/or all Proposals for any reason, without discussion with the Proponent(s);
- Accept a Proposal which is not the lowest Proposal; and
- Cancel or reissue the RFP without any changes.

e. The District reserves the right to enter into negotiations with one or more Proponents concerning the terms and conditions of the services to be provided, and expressly reserves the right through such negotiations to request changes, alterations, additions or deletions from the terms of any Proposal received.

f. If the District chooses to enter into a contract with a Proponent as a result of this RFP, the successful Proponent will be required to enter into a written agreement with the District. Such agreement will be prepared by the District and will embody the terms of the Proposal and any subsequent written amendments.

Limitation of Damages and Insurance

The Proponent is responsible for ensuring that they have obtained and considered all information necessary to understand the requirements of the RFP and to prepare and submit their Proposal.

Proponents are solely responsible for their own expenses in preparing a Proposal and for subsequent negotiations with the District, if any.

Proponents acknowledge that the District, in the preparation of the Request for Proposals, supply of oral or written information to Proponents, review of Proposals or the carrying out of the District's responsibilities under this Request for Proposals, does not owe a duty of care to the Proponents.

Except as expressly and specifically permitted in this RFP, no Proponent shall have any claim for

any compensation of any kind whatsoever as a result of participating in this RFP, and each Proponent, by submitting a Proposal, waives for itself, its successors and assigns, the right to sue the District for any loss, including economic loss, damage, cost or expense arising from or connected with any error, omission or misrepresentation occurring in the preparation of the Request for Proposals, the supply of oral or written information to Proponents, the review of Proposals, or the carrying out of the District's responsibilities under this Request for Proposals, with the exception of fraud on the District's part.

Not A Tender

This Request for Proposal is not a tender call, and neither it nor the submission of any response to this RFP creates a tender process or a "Contract A".

Modification of Terms

The District reserves the right to modify the terms of the Request for Proposal at any time at its sole discretion.

Use of Request for Proposal

This document, or any portion thereof, may not be used for any purpose other than the submission of Proposals.

Accuracy of Information

The District of Mackenzie makes no representation or warranty, either express or implied, with respect to the accuracy or completeness of any information contained or referred to in this RFP.

While the District has used considerable efforts to ensure an accurate representation of information in this Request for Proposal, the information contained in this Request for Proposal is supplied solely as a guideline for Proponents. The information is not guaranteed or warranted to be accurate by the District, nor is it necessarily comprehensive or exhaustive. Nothing in this Request for Proposal is intended to relieve Proponents from forming their own opinions and conclusions with respect to the matters addressed in this Request for Proposal.

APPENDIX A

Proponent Information And Agreement Form

(must be completed and returned)

PROPONENT INFORMATION

Legal Business Name: _____

Address: _____

Contact Person: _____

Contact Information: _____
(phone / cell / fax / email)

Date of Site Viewing: _____

Name of Person(s) That Participated in Site Viewing: _____

PROPONENT AGREEMENT

The e*nclosed proposal is submitted in response to the above-referenced Request for Proposals, including any addenda. Through submission of this proposal we agree to all of the terms and conditions of the Request for Proposals and agree that any inconsistent provisions in our proposal will be as if not written and do not exist. We have carefully read and examined the Request for Proposals, including the Instructions to Proponents, and have conducted such other investigations as were prudent and reasonable in preparing the proposal. We agree to be bound by statements and representations made in our proposal.*

Signature of Authorized Representative: _____

Printed Name of Authorized Representative: _____

Title of Authorized Representative: _____

Date: _____

To acknowledge receipt of each addendum, each addendum number issued should be noted below with a signature of an authorized representative of the organization, as being received.

Addendum No. 1 Signature _____ Date _____

Addendum No. 2 Signature _____ Date _____

APPENDIX B

Fixed Price Offer Form

(must be completed and returned)

FTU	Net Area (ha)	Cost ($) Access	Cost ($) Treatment		Total Cost ($)
#1	**7.2**				$
#2	**1.1**				$
#3	**1.6**				$
Sub Total	**9.9**				$
			GST	**5%**	$
			TOTAL		$

Note: Fixed prices are inclusive of all costs associated with completing the treatments to meet the objectives of the prescription.

ATTACHMENT 1

District of Mackenzie Fuel Management Prescription 2020

A. PROJECT IDENTIFICATION	
PROJECT ID AND UNIT ID: **District of Mackenzie Fuel Management Prescription 2020; Treatment Areas and their Treatment Units:** **1-MECH (TUs: DC-C, DC-E, DC-F);** **2-MECH (TU: DC-H); and** **3-MAN (TU: DC-C).**	LAND OR TENURE HOLDER: Crown Municipal (District of Mackenzie)
LATITUDE/LONGITUDE: 123°6'36.75"W 55°20'38.018"N (approximate).	GEOGRAPHIC DESCRIPTION: The proposed treatment areas are located within the WUI, directly adjacent to private homes/property to the north, south and west perimeter of town.
HIGHER-LEVEL PLAN(s): • Community Wildfire Protection Plan (CWPP) – District of Mackenzie (2017 Update) • McLeod Lake Mackenzie Community Forest (K2M) Forest Stewardship Plan 2016-2021 • Mackenzie Land Resource Management Plan (2000) • Mackenzie Sustainable Resource Management Plan • Mackenzie Natural Resource District (MNRD) Integrated Silviculture Strategy – Situation Analysis (2015) • MNRD Fire Management Plan (2017)	MAP REFERENCE NUMBER: 93O.035

B. Fuel Treatment PROJECT DESCRIPTION	
Fuel Management OBJECTIVE:	The proposed treatment areas contain a wildfire threat rating of Moderate to High, with a high priority for treatment due to their proximity to private residences and high-use recreation trails. The objectives of this prescription are to: • Reduce the risk of wildfire ignition, spread, and spotting within forested areas adjacent to private residences and infrastructure; • Reduce wildfire intensity and potential for crown fire around the town of Mackenzie; • Enhance public safety; • Demonstrate the principles and practices of effective FireSmart fuel/vegetation management to local community members and the broader public; • Accelerate forest succession to mature forest structural conditions with generally lower stand densities; • Enhance forest health and resilience to biotic and abiotic elements including mountain pine beetle, spruce beetle, western gall rust and windthrow; • Minimize negative impacts to, and where possible enhance, community values including recreation, cultural heritage, and visual quality; and • Minimize impacts to, and where possible, protect and enhance the availability/diversity of habitat and important ecosystem features.
STRATEGIES:	Strategies to achieve the above objectives include: • Thinning from below (i.e., remove suppressed, intermediate trees and select overstory trees) to reduce ladder fuels, crown bulk density, and ultimately reduce the risk of crown fire; • Retention of dominant and co-dominant canopy trees to a threshold that maintains a cool and moist understorey microclimate, where appropriate, while reducing wildfire behaviour intensity; • Pruning of retained trees to increase crown base height and reduce ladder fuel continuity; • Reduce fine surface fuel loading and flammable understorey vegetation to reduce surface fire intensity and rate of spread; • Retain and encourage live deciduous tree and shrub species with a high moisture content to reduce fire behaviour and provide wildlife habitat.
METHODS: Thin from below (TFB), Commercial thin (CT), Hazard tree removal (HTR), Pruning (PR), Surface fuel removal (SFR), Chipping (CHIP) into bins, Grinding (GRIND) into bins, Pile and burn (PB).	

C. TREATMENT UNIT (TU) SUMMARY							
TU	**NET AREA (ha)**	**GROSS AREA (ha)**	**LEAVE AREAS (ha)**	**NP (ha)**	**NAR (ha)**	**TREATMENT REGIME (i.e. PRU, THIN, PIL, BURN)**	**GENERAL DESCRIPTION**
1-MECH (DC-C North/South, DC-E, DC-F)	7.2	7.2	-	-	-	CT, TFB, HTR, PR, SFR, CHIP, GRIND, PB	This treatment unit is characterized as a C-3 fuel type comprised primarily of Bl and Ep in the overstory, with minor components of Sx and At. Understory density is high, with approximately 1,500 sph of Bl, Sx. A commercial thin from below, hazard tree removal, pruning of retained trees, surface fuel removal and chipping for debris disposal (or pile and burn in select locations upon development of a smoke management plan) is proposed. All healthy deciduous trees will be retained, as well as healthy conifers >27.5cm dbh.
2-MECH (DC-H)	1.1	1.1	-	-	-	CT, TFB, HTR, PR, SFR, CHIP, GRIND, PB	This treatment unit is characterized as a M-1/2 (80% conifer) fuel type composed of a mix of Bl, Sx, and At. Understory density is high, with approximately 1,200 sph of Bl. Soils are wet due to surrounding streams and wetland features. Thin from below, hazard tree removal, pruning of retained trees, surface fuel removal and chipping for debris disposal is proposed. Winter harvest is prescribed to limit soil disturbance. All healthy deciduous trees will be retained, as well as healthy conifers >35cm dbh.
3-MAN (DC-C-Man)*	1.6	1.6	-	-	-	TFB, HTR, PR, SFR, CHIP, GRIND, PB	This treatment area is characterized as an M-1/2 with gullied terrain; drainage features and wet soils make this treatment area operationally unsuited to mechanical harvest. Manual treatment surrounding the established recreation trail (15 m buffer) is proposed including thin from below of understory stems, prune branches on retained trees and surface fuel cleanup.
TOTALS	**9.9**	**9.9**	-	-	-	-	-
**TU-3 is not ribboned as operations are meant to manage fuels within a linear 15 m distance.*							

D. SITE CHARACTERISTICS							
TU	CFFBPS FUEL TYPE	TIMBER TYPE	BGC SUBZONE, VARIANT & SITE ASSOC.	ELEVATION RANGE (m)	SLOPE POSITION	SLOPE RANGE (%)	ASPECT
1-MECH (DC-C North/South, DC-E, DC-F)	C-3	Bl80Ep15Sx05	SBSmk2-01/05	750-780	Valley bottom	0-15%	S
2-MECH (DC-H)	M-1/2	Bl40Sx30At25Ac5	SBSmk2-01/05	750-780	Valley bottom	0-20%	SW

3-MAN (DC-C-Man)	M-1/2	Bl40Sx30At25Ac5	SBSmk2-01/05	750-780	Valley bottom	0-40%	W
FUEL TYPE DETERMINATION	Fuel types were determined using the provincial PSTA fuel type data and field verification.						

E. SOIL CHARACTERISTICS

TU	SOIL TEXTURE	DUFF DEPTH (cm)	COARSE FRAGMENTS (%)	SOIL DISTURBANCE LIMIT (%)	SOIL HAZARD RATING		
					Compaction	Erosion	Displacement
1-MECH (DC-C North/South, DC-E, DC-F) And **3-MAN** (DC-C-Man)	LS	3	70	10	Moderate	Moderate	Moderate
2-MECH (DC-H)	SL	2	55	10	Moderate	High	Moderate

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

Is the proposed cutting, modification or removal of trees, or site preparation, in an area that contains streams, lakes or wetlands?	**Yes**		Streams are located within units TU-2(DC-H) and TU-3(DC-C-Man): 1. Stream #1: S6 2. Stream #2: TBD Additionally, TU-2 (DC-H) is located directly east of wetlands (classification W-5)

RIPARIAN MANAGEMENT AREAS (RMAs) - FPPR sections 51 and 52

STREAM, LAKE, WETLAND ID	CLASS	RRZ (m)	RMZ (m)	SPECIFICATIONS FOR RIPAIRAN OR LAKESHORE MANAGEMENT AREAS
Stream #1	S-6	-	-	See Appendix A: Maps. Stream #1 is located along the boundary of TU-2(DC-H) with a high proportion of deciduous trees within the RMZ. Winter harvest is recommended given wet soils. Winter harvest is required within this S-6's RMZ given wet soils and some riparian features.
Stream #2	S-6	-	-	See Appendix A: Maps. This stream and associated RRZ and RMZ does not require specific considerations as its either outside of any TU or within 3-MAN.
Wetland #1	W-5	-	40	See Appendix A: Maps. The boundaries of a wetland complex (W-5) is located outside the boundary of 2-MECH (DC-H). Winter harvest is required within this W-5's RMZ given wet soils and some riparian features.

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?		**No**	

ROAD CONSTRUCTION IN RIPARIAN MANAGEMENT AREAS - FPPR section 50

Is road construction proposed in riparian management areas within	Yes	**No**	Not applicable as no road construction is proposed.

the treatment area or an associated road permit (RP)?			
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 are necessary for the proposed activities.
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?		**No**	
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?		**No**	
LICENCED WATER WORKS (inside or outside of a community watershed) - FPPR section 60			
Does the proposed treatment include areas that are within 100 m of a licensed waterworks?		**No**	
FISHERIES SENSITIVE WATERSHED - GAR section 14, FPPR section 8.1			
Are any activities proposed within a fisheries sensitive watershed?		**No**	
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?		**No**	
Will this project require road construction or deactivation within a community watershed?		**No**	
WATERSHED ASSESSMENT CONSIDERATIONS - FRPA section 180 areas with "significant watershed sensitivity"			
Does the proposed treatment area include areas that have watershed assessment considerations?		**No**	Since the proposed treatment areas are not within a community watershed, this is non applicable.

SOIL DISTURBANCE AND PERMANENT ACCESS STRUCTURES - FPPR sections 35 and 36

Treatment Area/Unit	Proposed Max. Allowable Soil Disturbance (%) (5% or 10%)	Proposed Max. Soil Disturbance for Roadside Work Areas (%)	Proposed Max. Permanent Access Structures (%)	Comments
1-MECH (DC-C North/South, DC-E, DC-F)	5%	25	N/A	No permanent access structures are allowed.
2-MECH (DC-H)	5%	25	N/A	No permanent access structures are allowed.

3-MAN (DC-C-Man)	5%		-	-	Treatment is to be completed manually. Soil disturbance is anticipated to be below 5%.
Do the proposed Permanent Access Structures exceed 7% of the total area?		**No**	No permanent access structures are proposed. Temporary access skid trails only are proposed.		
LANDSLIDES AND TERRAIN STABILITY - FPPR section 37					
Does the proposed treatment area include areas where terrain stability is a concern?		**No**	Slopes do not exceed 20% within mechanical lead treatment units (TU-1 and TU-2)		
SUITABLE SECONDARY STRUCTURE - FPPR section 43.1					
Does the proposed treatment area include a "targeted pine leading stand"?		**No**	All stands are sub-alpine fir (Bl) leading.		
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?		**No**			
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)?		**No**			
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	The proposed treatment areas overlap the range/distribution of the central mountain caribou population.		
OBJECTIVES SET BY GOVERNMENT FOR BIODIVERSITY OBJECTIVES (Landscape Level) - FPPR section 9					
Does the proposed treatment area include areas to which objectives for landscape level biodiversity under FPPR section 9 apply?		**No**	The proposed treatment area is within the Morfee Landscape Unit, established under the Mackenzie Land and Resource Management Plan (LRMP). The Morfee LU contains the following biodiversity assignment: • **Intermediate** Biodiversity Emphasis Option No legal or non-legal biodiversity objectives currently exist for the Morfee Landscape Unit. The treatment area is within the SBSmk BEC zone, with a Natural Disturbance regime of frequent stand-initiating fires (NDT3). Historically, these forested ecosystems experience large and severe wildfires which often averaging approximately 300 ha every 125 years, resulting in even-aged stands that vary in their uniformity based on the time since the last major disturbance. Methods within this prescription, such as thinning from below, and **removing a large portion of the overstory** is consistent with the historical spatial and temporal landscape level patterns of NDT 3.		
OBJECTIVES SET BY GOVERNMENT FOR BIODIVERSITY OBJECTIVES (Stand Level) - FPPR section 9.1					
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	As part of this prescription, all dominant and co-dominant overstory trees will be retained, with the exception of danger trees that pose a risk to crew workers. Wildlife Danger Tree Assessments are required prior to implementation to identify and retain high value wildlife trees; where practicable. 'No work zone' areas will constitute no more than 5% of the entire net treatment, measured by TU. In consultation with a WorkSafeBC (WCB) Inspector, treatment specifications may be reduced to activities that constitute LOD 1 to allow for modified treatment in vicinity of large diameter LOD 2 danger trees which are characterized as high value wildlife		

			trees. Resulting specifications for modified LOD 1 treatments must be confirmed with a WCB inspector, but may include: limbing, pruning trees <20cm dbh, use of in-helmet radio communication; and/or moving debris manually. Coarse woody debris will be retained as per Section H: Surface Fuel Loading. Larger diameter pieces (>25 cm) greater than 5m in length are preferred for retention. All deciduous trees and low flammability understory shrub and herb species will be retained within the treatment area.
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 considered to be of significant recreation value and are designated a resource feature?	**Yes**	No	Active community recreation trails are located within TU-1 and TU-3. If trail tread is disturbed after works the Contractor will make every effort to return the trail to its original trail tread alignment.
VISUAL QUALITY OBJECTIVES - GAR section 7, FRPA sections 180 and 181, FPPR section 9.2			
Is the proposed treatment within a scenic area?		**No**	No visual quality objectives exist for the proposed treatment areas. However, numerous private homes border treatment area boundary, therefore visual quality should be considered.
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**	A request for known archaeological/cultural sites was submitted to the Archaeology Branch on October 19, 2020. The Archaeology Branch replied on October 27, 2020, stating that no known archaeological sites are recorded within any of the treatment areas, and there is no data available describing the potential for unidentified sites. If, during any phase of implementation, a believed archaeological site above or below surface is discovered**, all activities in the vicinity must stop immediately** and the contract supervisor must contact the Archaeology 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	The Invasive Alien Plant Program (IAPP) database reports the following species have been identified in the vicinity of the treatment area, within the town of Mackenzie: • Hawkweed spp. *(HS),* • Oxeye Daisy *(OD),* • Orange Hawkweed *(OH),* • Common Tansy *(TC),* • Yellow Hawkweed *(YH).* In order to control the spread of and abundance of the above species, the Contractor will take the following management measures: • Limiting soil disturbance to <1% near invasive plant infested areas, particularly in mechanized treatment areas; • All machinery must be thoroughly pressure washed prior to each initial entry into the treatment unit.
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?		**No**	
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**		The Mackenzie Land and Resource Management Plan (LRMP) provides direction for planning and natural resource management for the area of interest. The proposed treatment area overlaps the following land use polygons: • Mackenzie Townsite Resource Management Zone (PRG_52_109) – Objectives regarding visual quality. No established visual quality objectives exist for the treatment areas. • The Morfee landscape unit, having a biodiversity emphasis option of intermediate.
Do the proposed activities conflict with land use objectives (higher level plans or objectives under the *Land Act*)?		**No**	Treatment activities proposed within this prescription do not conflict with legal requirements or non-legal guidance set out in the Mackenzie LRMP, including objectives for wildlife, biodiversity, visual quality, recreation, cultural resources, and water quality. However, a Section 17 Notation – Conservation Reserve land polygon (Gantahaz Lake reserve/notation tenure) overlaps roughly half of TU-2 MECH. FrontCounter BC was contacted to acquire more information regarding this area on October 19, 2020, and a follow up email was sent on March 8, 2021. Final approval to conduct fuel treatment operations on the overlapping area within the Section 17 Notation was received on **April 22, 2021** from the Lands Branch – Omineca Region via email.

G. OTHER CONSIDERATIONS AND REQUIREMENTS

CONSULTATION – FIRST NATIONS

FIRST NATION		CONCERNS IDENTIFIED AND MEASURES TO ADDRESS	
McLeod Lake Indian Bands		TBD – Treaty 8 disputed area	
First Nations consultation complete?	Yes	**No**	The First Nations Liaison (Rob Sweeney, MFLNRORD) advised the District of Mackenzie to send information sharing to the McLeod Lake Indian Band. The District sent a copy of this prescription to Cody Ross, McLeod Lake Indian Band Forestry Referrals Officer) on April 15, 2021. No response has been received to date.

CONSULTATION – GENERAL

District of Mackenzie Municipal Government Staff Information and a draft of this prescription were sent to DoM staff on February 23, 2021 and no response was received.
Mackenzie Outdoor Route & Trail Association (MORATA) – Ross Hobbs (representative of MORATA) was contacted in April 2021 and he stated that he had no concerns or issues with the content of this prescription.
BC Government – A copy of this draft was sent to Ravdeep Brar (MFLNRORD) on February 24, 2021 and no response was received.

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

Tenure Holder	Concerns		Measures proposed to address licensee's concerns
McLeod Lake Mackenzie Community Forest (K2M)	Yes	**No**	The MLMCF manager (Dan Boulianne) is aware of the proposed treatment areas and activities and has no issues or concerns.

Trapline Tag: TR0730T002		**No**	As indicated by the FrontCounter BC Manager in Prince George, the trapline owner does not wish to be identified, and therefore could not be contacted regarding the fuel treatment. Response from Tim Mergen is as follows, from October 20, 2020: *"I talked with Dawn this morning and she has referred the question on the disclosure of trapline information over to the individuals responsible for adjudicating these forms of tenure. As I understand things, very few trapline holders have given written permission to government to disclose this information. I will note, that over the years this has been a challenge for any person or business trying to engage with trapline holders. This is the risk the trapline holders take."*
PRIVATE PROPERTY			
Does private property border the proposed treatment area?	**Yes**		The treatment areas combined border 12 private land parcels. A majority of these private land parcels are homes/residences. No future lot transfers from crown to private land as discussed with the Land & Environmental Programs Coordinator Daris Gillis. Some private landowners have over the years stored equipment or built sheds on Crown land adjacent to their private properties. Continued conversations with these private landowners and the DoM municipal government staff should continue to ensure that proposed activities within this prescription can commence. Additionally, it is recommended that any FireSmart activities that occur on or near private land be completed simultaneously (if possible) to this treatment. Details on the FireSmart program as it relates to this treatment area are included in Appendix: D.
SMOKE MANAGEMENT			
Does a smoke management plan exist for the proposed treatment area?	Yes	**No**	A smoke management plan currently does not exist for the proposed treatment area. All treatment areas/units are within a 'High' smoke sensitivity polygon. Therefore, if any burning is to occur all OBSCR regulations must be adhered to (see sections below). Chipping and removal off site is the preferred method of debris disposal.
SAFETY			
Have any specific safety concerns been identified in or adjacent to the proposed treatment area?	**Yes**	No	Due to the close proximity of homes to many of these treatment areas, a post-treatment hazard tree assessment must occur. This is because some trees may be at higher risk of failure soon after treatment and they are within close proximity to homes or other valuable targets. Post-Treatment Hazard Tree Assessment must occur in treatment areas: DC-F, DC-C North and DC-C South (See Appendix A: Maps). The assessor must be either a Tree Risk Assessment Qualification (TRAQ) assessor or an individual certified as a Danger Tree Assessor (Parks Module). The assessor may recommend creating wildfire trees (i.e., stub and limb) where trees represent high value to wildlife and will no longer remain hazardous to surrounding values (residences) and to recreationalists. Powerlines are also another known safety concern – distribution and transmission are present near treatment areas (see Appendix A: Maps). All workers will be made aware of the location of these lines and all tree felling will ensure trees fall away from lines.

UTILITIES			
Are utilities located in or adjacent to the proposed treatment area? i.e. power lines, gas lines, etc.	**Yes**	No	Utility Right of Way: Sewer Effluent Line is located within 10m of TU-2 (DC-H) treatment unit. DOM Utility Department was contacted and no concerns were identified related to these proposed activities.
ACCESS CONTROL			
Are there any foreseen issues with access and access control during and post treatment?	**Yes**	No	An Access Control Plan must be developed before operations commence. This is due to the close proximity of these treatment areas to private land and residences as well as high recreational use within some of the treatment areas. The access control plan must be reviewed and signed off by the project supervisor. Details of the access control must be communicated to members of the public at least 30 days before operations commence. The access control must address the protection of recreationalists or citizens that enter the treatment area during the following phases: active tree felling. During active tree felling, trails must be blocked off with signage clearly indicating that the trail is closed. Trails may be reopened and the trail blocks removed when those hazards are no longer present. Overhead hazards, including danger trees must be made safe before recreationalists re-enter sections of the treatment area.
TRAFFIC CONTROL			
Is traffic control required at any point during operations?	Yes	**No**	No traffic control plan will be required.
OTHER (Public Notification)			
Public Notification will be led by the District of Mackenzie and will commence 30 days before start of operations. This notification will include social media, websites and written notice in local media.			

TREATMENT SPECIFICATIONS SUMMARY OVERVIEW– OVERALL GUIDELINES FOR ALL TREATMENT AREAS/TUs

The main goal for all TU's will be to create a relatively even-spaced forest, retaining the healthiest and largest trees. Years after treatment and when adjacent tree crowns coalesce, the area will display characteristics of a shaded fuel break. The contractor will follow the following bulleted guidelines across all treatment areas/units:

- Remove all dead standing trees (except when designated high value wildfire trees). Non-thrifty or unhealthy trees should be targeted for removal. In all TUs, preference for conifer tree retention will be (in descending order): Sx, Bl.
- Standing dead Sx and Sx showings signs of spruce beetle attack will be targeted for removal to reduce potential spread of spruce beetle attack,
- Retain all living deciduous overstory and understory trees,
- Scarring and/or scorching of retained trees will represent < 10% of retained trees, measured by net ha.
- Preserve natural clumping characteristics were practical and where wildfire threat objectives are not compromised, and
- Maximum stump height will be 15 cm and cut at an angle less than 10 degrees.

H. STAND AND STOCK TABLE – <u>TU-1: MECH (DC-C Mech, DC-E, DC-F)</u>

			STEM PER HECTARE (SPH)			VOLUME (m3/ha)			BASAL AREA (m2/ha)		
Species	Average Crown to Base	Average Tree Height (m)	Existing	Cut	Leave	Existing	Cut	Leave	Existing	Cut	Leave

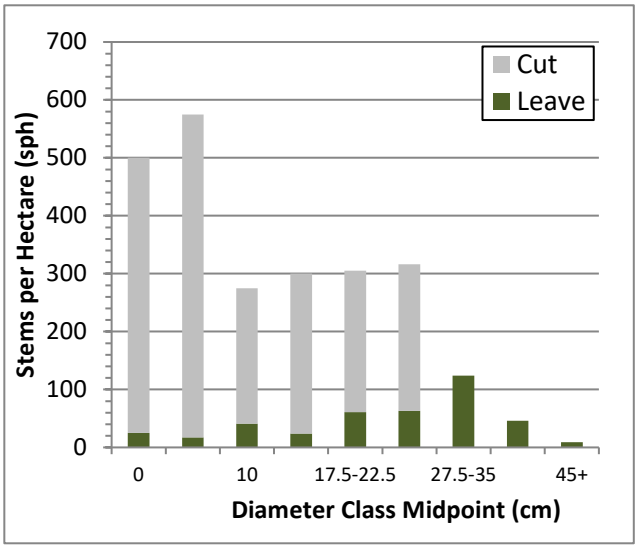
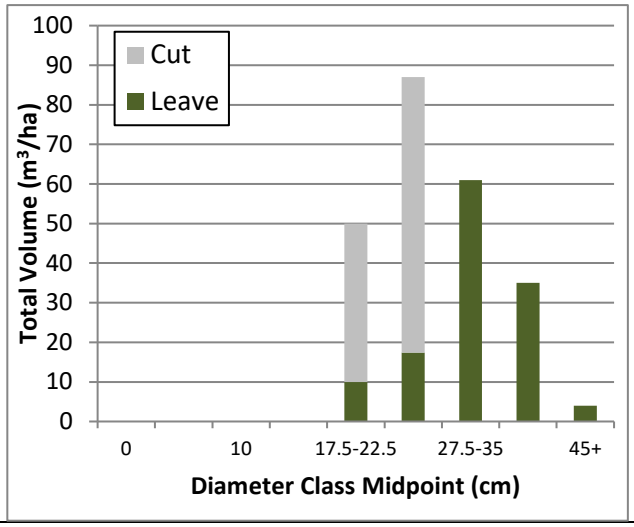
	Height (m)										
Layer 1 (>45 cm dbh)											
DU	-	4	9	0	9	4	0	4	2	0	2
Total Live	-	-	0	0	0	0	0	0	0	0	0
Total All Species	-	4	9	0	9	4	0	4	2	0	2
Total Conifer	-	-	0	0	0	0	0	0	0	0	0
Layer 1 (35 - 45 cm dbh)											
Bl	4	19	17	0	17	17	0	17	2	0	2
Ep	-	19	19	0	19	11	0	11	2	0	2
Sx	8	19	10	0	10	7	0	7	1	0	1
Total Live	-	19	46	0	46	35	0	35	5	0	5
Total All Species	-	19	46	0	46	35	0	35	5	0	5
Total Conifer	6	19	27	0	27	24	0	24	3	0	3
Layer 1 (27.5 - 35 cm dbh)											
Bl	4	20	94	0	94	50	0	50	7	0	7
Ep	-	20	30	0	30	11	0	11	2	0	2
Total Live	-	20	124	0	124	61	0	61	9	0	9
Total All Species	-	20	124	0	124	61	0	61	9	0	9
Total Conifer	6	20	94	0	94	50	0	50	7	0	7
Layer 1 (22.5 cm - 27.5 cm dbh)											
Bl	4	17	257	257	0	69	69	0	12	12	0
Ep	-	17	38	0	38	12	0	12	2	0	2
Sx	8	17	21	0	21	6	0	6	1	0	1
Total Live	-	17	316	257	59	87	69	18	15	12	3

Total All Species	-	17	316	257	59	87	69	18	15	12	3
Total Conifer	6	17	278	257	21	75	69	6	13	12	1
Layer 1 (17.5cm dbh - 22.5 cm dbh)											
Bl	4	17	278	250	28	44	40	4	8	7	1
Ep	-	17	27	0	27	6	0	6	1	0	1
Total Live	-	17	305	250	55	50	40	10	9	7	2
Total All Species	-	17	305	250	55	50	40	10	9	7	2
Total Conifer	6	17	278	250	28	44	40	4	8	7	1
Layer 1 (12.5 cm - 17.5 cm dbh)											
Bl	4	15	250	250	0	0	0	0	0	0	0
DU	-	15	25	25	0	0	0	0	0	0	0
Ep	-	15	25	0	25	0	0	0	0	0	0
Total Live	-	15	300	275	25	0	0	0	0	0	0
Total All Species	-	15	300	275	25	0	0	0	0	0	0
Total Conifer	6	15	250	250	0	0	0	0	0	0	0
Total Layer 1											
Total Layer 1 - All Species	-	-	1100	782	318	237	109	128	40	19	21
Total Layer 1 - Conifers Only	6	15	927	757	170	193	109	84	31	19	12
Layer 2 (7.5-12.49)											
Bl	2	10	225	225	0	-	-	-	-	-	-
Ep	2	10	50	0	50	-	-	-	-	-	-
Total Live	2	10	275	225	50	-	-	-	-	-	-
Total All Species	2	10	275	225	50	-	-	-	-	-	-

Total Conifer	2	10	225	225	0	-	-	-	-	-	-
Layer 3 (2.5-7.49)											
Bl	1	2	400	388	12	-	-	-	-	-	-
DU	1	2	175	175	0	-	-	-	-	-	-
Total Live	1	2	400	388	12	-	-	-	-	-	-
Total All Species	1	2	575	563	12	-	-	-	-	-	-
Total Conifer	1	2	400	388	12	-	-	-	-	-	-
Layer 4 (<1.3m)											
Bl	0	1	375	356	19	-	-	-	-	-	-
Sx	0	1	125	119	6	-	-	-	-	-	-
Total Live	0	1	500	475	25	-	-	-	-	-	-
Total All Species	0	1	500	475	25	-	-	-	-	-	-
Total Conifer	0	1	500	475	25	-	-	-	-	-	-

SURFACE FUEL LOADING (kg/m^2)	**Existing:** Small-Med (0.1-7.5cm diameter): 0.95 kg/m2 Large (>7.6cm diameter): 9.41 kg/m2	**Target:** Small-Med: Maintain < 1kg/m2 Large: Reduce to < 1.5 kg/m2
	Distribution:	**Distribution:** Scattered
	Method used to measure:	The USFS photoload photo method[1].
Crown Closure (%)	Existing: 40%	Target: 25%
BIODIVERSITY AND FOREST HEALTH CONSIDERATIONS AND TARGETS		
COARSE WOODY DEBRIS (CWD) RETENTION TARGET - sph and Distribution	Current CWD: approximately 360 pieces/ha (>5m in length) Target CWD: approximately 150 pieces/ha (>5m in length) CWD is an important habitat element. Where available, retain a minimum of 150 pieces/ ha (equates to 15 m spacing) with a preference for larger CWD pieces (> 25 cm diameter at top) and > 3 meter in length, scattered randomly throughout the area. Existing decayed large diameter CWD (> Decay Class or higher[2]) will be given preference for retention to enhance wildlife habitat and ecosystem values. CWD in decay class 4 or above is not counted towards the CWD target. **No Sx will be left as CWD to reduce spread of spruce beetle; all Sx felled must be removed from the site.**	

[1] https://www.fs.usda.gov/treesearch/pubs/26755

	A piece is defined as a 5-meter piece and therefore a long log may be counted as multiple 'pieces'.
WILDLIFE TREE RETENTION TARGET	Retention of high-value wildlife trees will occur provided that they represent <5% of each treatment unit.
FOREST HEALTH & WINDTHROW	Windthrow hazard is assessed as low to moderate. Given the treatment specifications, only endemic windtrhow (5-10%) is expected over time. Due to the suburban location of these treatment units, hazard trees must be assessed by either a Tree Risk Assessment Qualification (TRAQ) assessor or an individual certified as a Danger Tree Assessor (Parks Module). The assessor may recommend creating wildlife trees (i.e., stub and limb) where trees represent high value to wildlife and will no longer remain hazardous to surrounding values (residences) and to recreationalists. A utility arborist will be used to manage all tree felling/topping operations.
TREATMENT SPECIFICATIONS SUMMARY - <u>TU-1: MECH (DC-C Mech, DC-E, DC-F)</u>	
TU	TREE REMOVAL/RETENTION STRATEGY BY SIZE/SPECIES (Summarize specifications identified in table above)
1-MECH (DC-C Mech, DC-E, DC-F)	**1-MECH:** Thin from below conifers up to 35 cm DBH to a total target average overstory (+17.5 cm DBH) density of **275 SPH (+/- 50 SPH)** or an average retention of **21 m²/ha. 275 SPH equates to 6.5 m intertree spacing.** In addition, retain approximately 100 SPH of understory conifer trees. See figures and table below.  

Stand Layer	DBH Class Midpoint (cm)	Species				Cutting Specs	Cut	Leave
		Bl	DU	Ep	Sx			
L4	0	375			125	95%	475	25
L3	5	400	175			97%	558	17
L2	10	225		50		85%	234	41
L1	12.5-17.5	250	25	25		92%	276	24
	17.5-22.5	278		27		80%	244	61
	22.5-27.5	257		38	21	80%	253	63
	27.5-35	94		30		0%	0	124
	35-45	17		19	10	0%	0	46
	45+		9			0%	0	9
						Totals	2039	411

TREATMENT SPECIFICATION RATIONALE (See notes to assist)

This prescription specifies treatment activities that will result in a reduction in stand stem density, crown bulk density, surface fuel loading, ladder fuels, and vertical and horizontal fuel continuity. Fuel management in these treatment units will function to reduce aggressive fire behaviour to an extent that will limit crown fire behaviour, reduce rate of spread, and meet overall objectives for public safety and wildfire risk reduction within the WUI. See Appendix C: Fire Behaviour Modeling.

TU 1-MECH (DC-C Mech, DC-E, DC-F)

Factor	Pre-Treatment	Post-Treatment
Fire Type	Passive Crown	Surface Fire
Likelihood of Crown Fire (%)	78	5
Rate of Spread (m/min)	9.6	2.2
Critical Surface Fire Intensity (kW/m)	69	2,608
Wildfire Intensity (kW/m)	2,570	586

STAND AND STOCK TABLE – TU-2: MECH (DC-H)

			STEM PER HECTARE (SPH)			VOLUME (m3/ha)			BASAL AREA (m2/ha)		
Species	Average Crown to Base Height (m)	Average Tree Height (m)	Existing	Cut	Leave	Existing	Cut	Leave	Existing	Cut	Leave
Layer 1 (>45 cm dbh)											
Act	-	29	9	0	9	26	0	26	3	0	3
Sx	4	29	30	0	30	52	0	52	5	0	5

Total Dead Potential	-	29	0	0	0	0	0	0	0	0	0
Total Live	-	29	39	0	39	78	0	78	8	0	8
Total All Species	-	29	39	0	39	78	0	78	8	0	8
Total Conifer	4	29	30	0	30	52	0	52	5	0	5
Layer 1 (35 - 45 cm dbh)											
At	-	27	40	0	40	51	0	51	5	0	5
Sx	4	27	76	0	76	69	0	69	8	0	8
Total Dead Potential	-	27	28	28	0	23	23	0	3	3	0
Total Live	-	27	116	0	116	120	0	120	13	0	13
Total All Species	-	27	144	28	116	143	23	120	16	3	13
Total Conifer	4	27	76	0	76	69	0	69	8	0	8
Layer 1 (27.5 - 35 cm dbh)											
At	-	26	117	0	117	77	0	77	8	0	8
Bl	1	26	42	38	4	14	13	1	3	3	0
Sx	4	26	34	31	3	24	22	2	3	3	0
Total Dead Potential	-	26	0	0	0	0	0	0	0	0	0
Total Live	-	26	193	69	124	115	35	80	14	6	8
Total All Species	-	26	193	69	124	115	35	80	14	6	8
Total Conifer	2.5	26	76	69	7	38	35	3	6	6	0
Layer 1 (22.5 cm - 27.5 cm dbh)											
Bl	1	18	59	47	12	16	13	3	3	2	1
Total Dead Potential	-	18	0	0	0	0	0	0	0	0	0
Total Live	-	18	59	47	12	16	13	3	3	2	1

Total All Species	-	18	59	47	12	16	13	3	3	2	1
Total Conifer	1	18	59	47	12	16	13	3	3	2	1
Layer 1 (17.5cm dbh - 22.5 cm dbh)											
Bl	1	15	583	571	12	80	78	2	16	16	0
Total Dead Potential	-	15	0	0	0	0	0	0	0	0	0
Total Live	-	15	583	571	12	80	78	2	16	16	0
Total All Species	-	15	583	571	12	80	78	2	16	16	0
Total Conifer	1	15	583	571	12	80	78	2	16	16	0
Layer 1 (12.5 cm - 17.5 cm dbh)											
Bl	1	15	67	57	10	0	0	0	0	0	0
Total Dead Potential	-	15	0	0	0	0	0	0	0	0	0
Total Live	-	15	67	57	10	0	0	0	0	0	0
Total All Species	-	15	67	57	10	0	0	0	0	0	0
Total Conifer	1	15	67	57	10	0	0	0	0	0	0
Total Layer 1											
Total Layer 1 - All Species	-	-	1085	772	313	432	149	283	57	27	30
Total Layer 1 - Conifers Only	2.75	22	891	744	147	255	126	129	38	24	14
Layer 2 (7.5-12.49)											
Bl	1	10	200	184	16	-	-	-	-	-	-
Total Live	-	10	200	184	16	-	-	-	-	-	-
Total All Species	-	10	200	184	16	-	-	-	-	-	-
Total Conifer	1	10	200	184	16	-	-	-	-	-	-

Layer 3 (2.5-7.49)											
At	-	2	133	0	133	-	-	-	-	-	-
Bl	1	2	867	867	0	-	-	-	-	-	-
Total Live	-	2	1000	867	133	-	-	-	-	-	-
Total All Species	-	2	1000	867	133	-	-	-	-	-	-
Total Conifer	1	2	867	867	0	-	-	-	-	-	-
Layer 4 (<1.3m)											
Bl	0	1	133	106	27	-	-	-	-	-	-
Total Live	-	1	133	106	27	-	-	-	-	-	-
Total All Species	-	1	133	106	27	-	-	-	-	-	-
Total Conifer	0	1	133	106	27	-	-	-	-	-	-

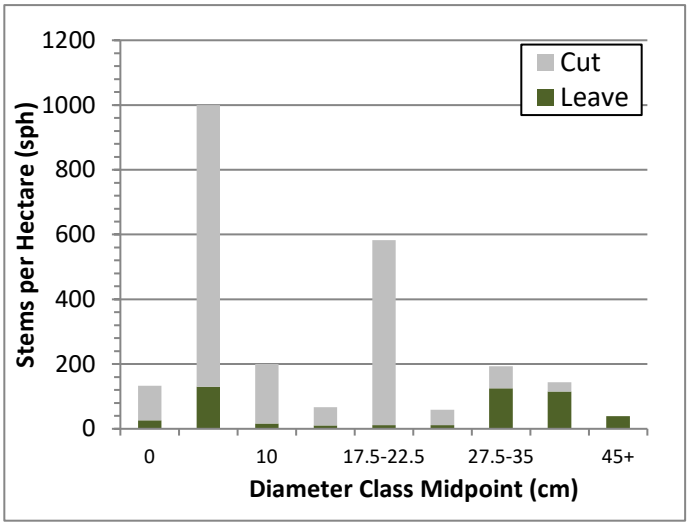
SURFACE FUEL LOADING (kg/m^2)	**Existing:** Small-Med (0.1-7.5cm diameter): 0.46 kg/m2 Large (>7.6cm diameter): 22.47 kg/m2	**Target:** Small-Med: Maintain < 1kg/m2 Large: Reduce to < 1.5 kg/m2
	Distribution:	**Distribution:** Scattered
	Method used to measure:	The USFS photoload photo method[2].
Crown Closure (%)	Existing: 25%	Target: 15-20%

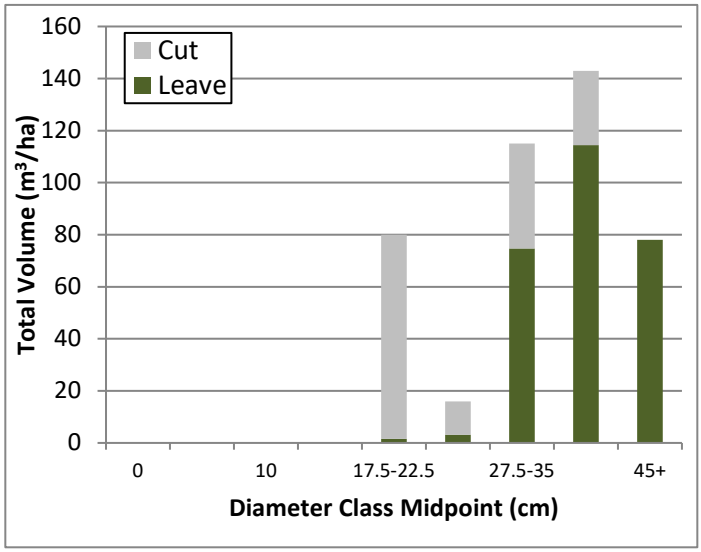
BIODIVERSITY AND FOREST HEALTH CONSIDERATIONS AND TARGETS

COARSE WOODY DEBRIS (CWD) RETENTION TARGET - sph and Distribution	Current CWD: approximately 430 pieces/ha (>5m in length) Target CWD: approximately 150 pieces/ha (>5m in length) CWD is an important habitat element. Where available, retain a minimum of 150 pieces/ ha (equates to 15 m spacing) with a preference for larger CWD pieces (> 25 cm diameter at top) and > 3 meter in length, scattered randomly throughout the area. Existing decayed large diameter CWD (> Decay Class or higher2) will be given preference for retention to enhance wildlife habitat and ecosystem values. CWD in decay class 4 or above is not counted towards the CWD target. **No Sx will be left as CWD to reduce spread of spruce beetle; all Sx felled must be removed from the site.** A piece is defined as a 5-meter piece and therefore a long log may be counted as multiple 'pieces'. CWD in excess of this minimum may be removed at the contract supervisor's discretion.

[2] https://www.fs.usda.gov/treesearch/pubs/26755

WILDLIFE TREE RETENTION TARGET	Retention of high-value wildlife trees will occur provided that they represent <5% of each treatment unit.
FOREST HEALTH & WINDTHROW	Windthrow hazard is assessed as low to moderate. Given the treatment specifications, only endemic windtrhow (5-10%) is expected over time. Due to the suburban location of these treatment units, hazard trees must be assessed by either a Tree Risk Assessment Qualification (TRAQ) assessor or an individual certified as a Danger Tree Assessor (Parks Module). The assessor may recommend creating wildlife trees (i.e., stub and limb) where trees represent high value to wildlife and will no longer remain hazardous to surrounding values (residences) and to recreationalists. A utility arborist will be used to manage all tree felling/topping operations.
TREATMENT SPECIFICATIONS SUMMARY - <u>TU-2: MECH (DC-H)</u>	
TU	TREE REMOVAL/RETENTION STRATEGY BY SIZE/SPECIES (Summarize specifications identified in table above)
2-MECH (DC-H)	**2-MECH (DC-H):** Thin from below up to 35 cm DBH (trees cut above this size are DP trees) to a total target average overstory (+17.5 cm DBH) density of **275 SPH (+/- 50 SPH)** or an average retention of **21 m^2/ha. 275 SPH equates to 6.5 m intertree spacing.** In addition, retain approximately 100 SPH of understory conifer trees.





Stand Layer	DBH Class Midpoint (cm)	Species					Cutting Specs	Cut	Leave
		Act	At	Bl	DP	Sx			
L4	0			133			80%	106	27
L3	5		133	867			87%	870	130
L2	10			200			92%	184	16
	12.5-17.5			67			85%	57	10
	17.5-22.5			583			98%	571	12
	22.5-27.5			59			80%	47	12
	27.5-35		117	42		34	35%	68	125
	35-45		40		28	76	20%	29	115
L1	45+	9				30	0%	0	39
							Totals	1932	486

TREATMENT SPECIFICATION RATIONALE (See notes to assist)

This prescription specifies treatment activities that will result in a reduction in stand stem density, crown bulk density, surface fuel loading, ladder fuels, and vertical and horizontal fuel continuity. Fuel management in these treatment units will function to reduce aggressive fire behaviour to an extent that will limit crown fire behaviour, reduce rate of spread, and meet overall objectives for public safety and wildfire risk reduction within the WUI. See Appendix C: Fire Behaviour Modeling.

2-MECH (DC-H)

Factor	Pre-Treatment	Post-Treatment
Fire Type	Passive Crown	Surface Fire
Likelihood of Crown Fire (%)	98	7
Rate of Spread (m/min)	9.9	2.2
Critical Surface Fire Intensity (kW/m)	26	2,284
Wildfire Intensity (kW/m)	4,452	586

H. STAND AND STOCK TABLE – TU-3: MANUAL (DC-C Man)

			STEM PER HECTARE (SPH)			VOLUME (m3/ha)			BASAL AREA (m2/ha)		
Species	Average Crown to Base Height (m)	Average Tree Height (m)	Existing	Cut	Leave	Existing	Cut	Leave	Existing	Cut	Leave
Layer 1 (>45 cm dbh)											
Act	-	29	9	0	9	26	0	26	3	0	3
Sx	1	29	30	0	30	52	0	52	5	0	5
Total Dead Potential	-	29	0	0	0	0	0	0	0	0	0

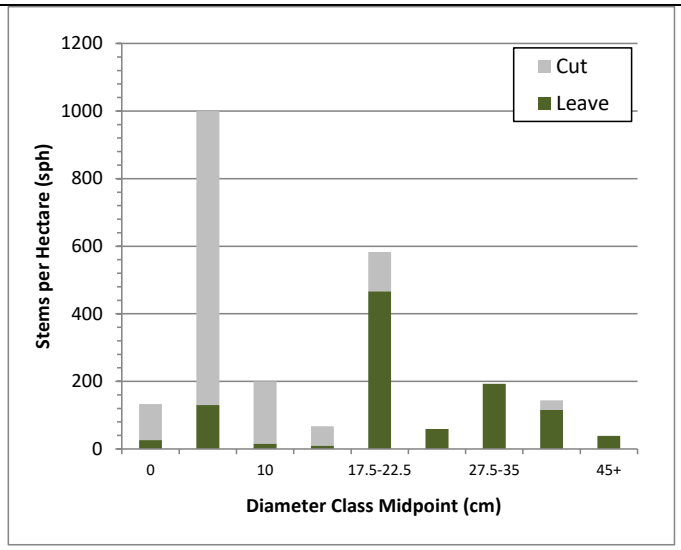
Total Live	-	29	39	0	39	78	0	78	8	0	8
Total All Species	-	29	39	0	39	78	0	78	8	0	8
Total Conifer	1	29	30	0	30	52	0	52	5	0	5
Layer 1 (35 - 45 cm dbh)											
At	-	27	40	0	40	51	0	51	5	0	5
Sx	1	27	76	0	76	69	0	69	8	0	8
Total Dead Potential	-	27	28	28	0	23	23	0	3	3	0
Total Live	-	27	116	0	116	120	0	120	13	0	13
Total All Species	-	27	144	28	116	143	23	120	16	3	13
Total Conifer	1	27	76	0	76	69	0	69	8	0	8
Layer 1 (27.5 - 35 cm dbh)											
At	-	26	117	0	117	77	0	77	8	0	8
Bl	4	26	42	0	42	14	0	14	3	0	3
Sx	1	26	34	0	34	24	0	24	3	0	3
Total Dead Potential	-	26	0	0	0	0	0	0	0	0	0
Total Live	-	26	193	0	193	115	0	115	14	0	14
Total All Species	-	26	193	0	193	115	0	115	14	0	14
Total Conifer	2.5	26	76	0	76	38	0	38	6	0	6
Layer 1 (22.5 cm - 27.5 cm dbh)											

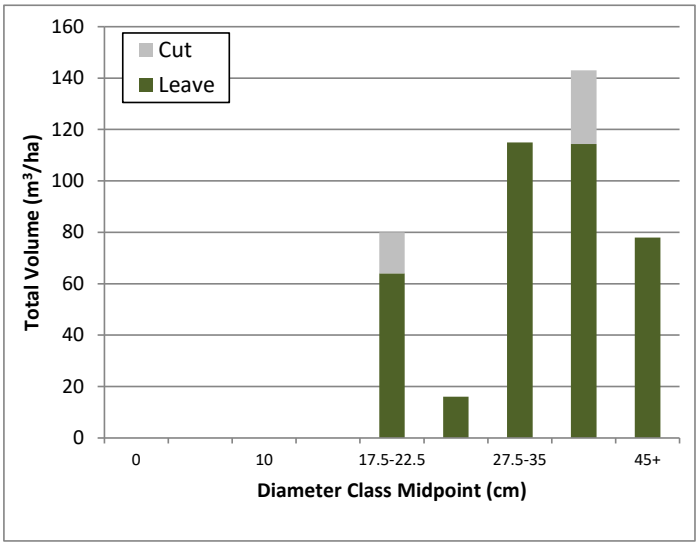
Bl	4	18	59	0	59	16	0	16	3	0	3
Total Dead Potential	-	18	0	0	0	0	0	0	0	0	0
Total Live	-	18	59	0	59	16	0	16	3	0	3
Total All Species	-	18	59	0	59	16	0	16	3	0	3
Total Conifer	4	18	59	0	59	16	0	16	3	0	3
Layer 1 (17.5cm dbh - 22.5 cm dbh)											
Bl	4	15	583	117	466	80	16	64	16	3	13
Total Dead Potential	-	15	0	0	0	0	0	0	0	0	0
Total Live	-	15	583	117	466	80	16	64	16	3	13
Total All Species	-	15	583	117	466	80	16	64	16	3	13
Total Conifer	4	15	583	117	466	80	16	64	16	3	13
Layer 1 (12.5 cm - 17.5 cm dbh)											
Bl	4	15	67	57	10	0	0	0	0	0	0
Total Dead Potential	-	15	0	0	0	0	0	0	0	0	0
Total Live	-	15	67	57	10	0	0	0	0	0	0
Total All Species	-	15	67	57	10	0	0	0	0	0	0
Total Conifer	4	15	67	57	10	0	0	0	0	0	0
Total Layer 1											

Total Layer 1 - All Species	-	-	1085	202	883	432	39	393	57	6	51
Total Layer 1 - Conifers Only	2.75	22	891	174	717	255	16	239	38	3	35
Layer 2 (7.5-12.49)											
Bl	1	10	200	184	16	-	-	-	-	-	-
Total Live	-	10	200	184	16	-	-	-	-	-	-
Total All Species	-	10	200	184	16	-	-	-	-	-	-
Total Conifer	1	10	200	184	16	-	-	-	-	-	-
Layer 3 (2.5-7.49)											
At	-	2	133	0	133	-	-	-	-	-	-
Bl	1	2	867	867	0	-	-	-	-	-	-
Total Live	-	2	1000	867	133	-	-	-	-	-	-
Total All Species	-	2	1000	867	133	-	-	-	-	-	-
Total Conifer	1	2	867	867	0	-	-	-	-	-	-
Layer 4 (<1.3m)											
Bl	0	1	133	106	27	-	-	-	-	-	-
Total Live	-	1	133	106	27	-	-	-	-	-	-
Total All Species	-	1	133	106	27	-	-	-	-	-	-
Total Conifer	0	1	133	106	27	-	-	-	-	-	-

SURFACE FUEL LOADING (kg/m^2)	**Existing:** Small-Med (0.1-7.5cm diameter): Large (>7.6cm diameter):	**Target:** Small-Med: Maintain < 1kg/m2 Large: Reduce to < 1.5 kg/m2
	Distribution:	**Distribution:** Scattered
	Method used to measure:	The USFS photoload photo method[3].
Crown Closure (%)		Target: ~ 20%
BIODIVERSITY AND FOREST HEALTH CONSIDERATIONS AND TARGETS		
COARSE WOODY DEBRIS (CWD) RETENTION TARGET - sph and Distribution	Target CWD: Maximum 225 pieces/ha (>5m in length) CWD is an important habitat element. Where available, retain a minimum of 150 pieces/ ha (equates to 15 m spacing) with a preference for larger CWD pieces (> 25 cm diameter at top) and > 3 meter in length, scattered randomly throughout the area. Existing decayed large diameter CWD (> Decay Class or higher[2]) will be given preference for retention to enhance wildlife habitat and ecosystem values. CWD in decay class 4 or above is not counted towards the CWD target. **No Sx will be left as CWD to reduce spread of spruce beetle; all Sx felled must be removed from the site.** A piece is defined as a 5-meter piece and therefore a long log may be counted as multiple 'pieces'. CWD in excess of this minimum may be removed at the contract supervisor's discretion.	
WILDLIFE TREE RETENTION TARGET	Retention of high-value wildlife trees will occur provided that they represent <5% of each treatment unit.	
FOREST HEALTH & WINDTHROW	Windthrow hazard is assessed as low to moderate. Given the treatment specifications, only endemic windtrhow (5-10%) is expected over time. Some Spruce Bark Beetle attack exists in this TU and has affected the larger sized cohort of Sx. There are notable dead standing Sx trees, some of which may be danger trees or may eventually fall and pose a risk to recreationalists in this TU's trails. Standing dead Sx and Sx showings signs of spruce beetle attack will be targeted for removal. No forest health concerns post treatment.	
TREATMENT SPECIFICATIONS SUMMARY - <u>TU-3: MANUAL (DC-C Man)</u>		
TU	TREE REMOVAL/RETENTION STRATEGY BY SIZE/SPECIES (Summarize specifications identified in table above)	
3-Manual (DC-C Man)	**3-Manual (DC-C MAN):** Thin from below conifer stems up to 22.5 cm DBH to a total target average overstory (+17.5 cm DBH) density of **700 SPH (+/- 50 SPH). 700 SPH equates to 4.0 m intertree spacing.** In addition, retain approximately 50 SPH of understory conifer trees. See Table below.	

[3] https://www.fs.usda.gov/treesearch/pubs/26755





Stand Layer	DBH Class Midpoint (cm)	Species					Cutting Specs	Cut	Leave
		Act	At	Bl	DP	Sx			
L4	0			133			80%	106	27
L3	5		133	867			87%	870	130
L2	10			200			92%	184	16
	12.5-17.5			67			85%	57	10
	17.5-22.5			583			20%	117	466
	22.5-27.5			59			0%	0	59
	27.5-35		117	42		34	0%	0	193
	35-45		40		28	76	20%	29	115
L1	45+	9				30	0%	0	39
							Totals	1363	1055

TREATMENT SPECIFICATION RATIONALE (See notes to assist)

This prescription specifies treatment activities that will result in a reduction in stand stem density, crown bulk density, surface fuel loading, ladder fuels, and vertical and horizontal fuel continuity. Fuel management in these treatment units will function to reduce aggressive fire behaviour to an extent that will limit crown fire behaviour, reduce rate of spread, and meet overall objectives for public safety and wildfire risk reduction within the WUI. See Appendix C: Fire Behaviour Modeling.

TU 3-Manual (DC-C Man)

Factor	Pre-Treatment	Post-Treatment
Fire Type	Passive Crown	Surface Fire
Likelihood of Crown Fire (%)	98	7
Rate of Spread (m/min)	9.9	2.2
Critical Surface Fire Intensity (kW/m)	26	2,284
Wildfire Intensity (kW/m)	4,452	586

I. TREATMENT DESCRIPTION

MERCHANTABLE TIMBER HARVEST

ROADS, LANDINGS AND TRAILS: Existing access is good. No road building is anticipated; however, skid trails will be utilized (see below specifications).

1-MECH:

DC-C-North/South: Access from Lempray Dr, McIntyre Dr, Centennial Dr.

DC-E: Access from Highway 39

DC-F: Access from Lempray Dr, Gataiga Dr.

2-MECH:

DC-H: Access from Chichouyenly Dr.

3-MAN:

DC-C-Man: Access from Lempray Dr. and unpaved road off of Sewage Lagoon Rd.

FELLING:

1-MECH, 2-MECH: It is recommended that **t**rees are felled using a small feller buncher or other harvesting equipment system.

TU3-MAN: Trees will be felled by hand.

YARDING/SKIDDING:

TU1-MECH and TU2-MECH: Whenever practicable, machines should use existing old roads and skid trails. Bladed trails must be located in consultation with the contract supervisor and must avoid areas of seepage.

TU3-MAN: Skid trails are not allowed unless signed off by the contract supervisor.

LOADING AND HAULING: Roadside loading is plausible for all treatment units.

SLASH DISPOSAL: Chipping and grinding off-site are the preferred methods of debris disposal due to proximity of homes and current levels of fuel loading.

SOIL DISTURBANCE: Any soil disturbance/displacement must be rehabilitated as soon as possible, including slope recontouring and surfacing with material that inhibits erosion and establishment of invasive species. During burning, debris hauling, and equipment transport:

- Minimize soil disturbance and forest floor displacement,
- Machine access corridors must be approved by the contract supervisor, mapped and photo-documented prior to treatment,
- Should an unacceptable level of soil disturbance occur on trails or within the treatment area, the contract supervisor will develop an appropriate rehabilitation plan,
- Established trails will be maintained in or restored to pre-treatment condition, or as specified by the contract supervisor,
- Deactivation of temporary access will be completed immediately following treatment implementation, in order to inhibit any future vehicular/ATV access into treatment areas, and
- Deactivation and rehabilitation are site specific and can involve any combination of the following approaches:
    - 1. Removal and/or redistribution of woody materials as necessary to limit the concentration of subsurface moisture in the area;
    - 2. Decompaction of compacted soils, where possible;
    - 3. Returning displaced surface soils and berm materials; and/or
    - 4. Revegetation of exposed mineral soils.

SPECIAL MEASURES: None.

STAND MODIFICATION TREATMENTS

MERCHANTABLE TIMBER UTILIZATION: Was commercial timber harvest considered? Yes **X** No ☐

If commercial timber harvest not prescribed, explain: Due to windthrow concerns, proximity to homes, and active recreation trails, the largest healthy trees will be retained in all TUs. Minimal merchantable timber utilization is expected. The following merchantable timber volumes will be removed:

1-MECH: approximately 110 m^3/ha of Bl
2-MECH: approximately 160 m^3/ha of Bl
3-MAN: Nil merchantable timber is expected and no volume will be utilized.

BRUSHING: N/A

PRUNING:
Retained conifers of all L1, L2, and L3 size classes will be pruned to 2.5m. Pruning will remove branches to a height that maintains at least 40% of the total tree height as live crown. Pruning will be measured from the ground to the lowest reaching point of a branch (usually the branch tip). It is expected that live crown ratio will be minimally impacted by this treatment prescription. Pruning cuts will aim to be flush with the tree stem without cutting into the branch collar, and branch stubs must be less than 1cm long. Dead branches >5 cm in diameter may be left unpruned at the discretion of the contract supervisor.

THINNING: Existing stand condition and target retention densities for individual treatment units are described in detail in Section H of this prescription. Target densities vary by TU according to stand structure, topography, and soil sensitivity.

DEBRIS PILING under the *Wildfire Act and Regulation*

Debris piles will be constructed manually, and all piles must be disposed of following the below guidelines. All burning is to be conducted in compliance with the *BC Wildfire Act and Wildfire Regulation*.

When burning is used to dispose of piles, the following requirements apply to either Category 2 and 3 fires:

- Burn piles must be constructed within the boundaries of TUs to facilitate effective ignition and complete combustion with minimal tending by ground crews. Piles will feature a mix of small/large and live/dead stem and branch sections arranged to burn efficiently with minimal smoke production. Levels of dirt/soil must be kept to a minimum.
- Burn piles must not be located inside or within a distance of **3m** of any recreation trail, an animal burrow, a snag, and must not result in scorching or heat damage to more than 5% of retained trees.
- It is the contractor's responsibility to obtain all necessary burn permits and facilitate ongoing communication with both the Local Fire Department and the BCWS.

Guidelines for Category 2 piles[4]:

- The Contactor will not concurrently burn more than two piles, and adhere to a maximum pile size of 3m x 3m x 2m tall,
- To reduce the number of piles, burning can occur concurrently with thinning operations using the hot-fed technique. However, up to 80 piles per hectare may be created if concurrent burning during thinning is not possible due to fire weather conditions.

Guidelines for Category 3 piles[5]:

The Contractor, under Category 3 may burn either more than 2 piles outlined above (3m x 3m x 2m tall) or may burn larger roadside piles. However, the Contractor must still follow the below regulations whether burning small (3m x 3m x 2m tall) or large roadside piles:

- To reduce the number of piles, burning can occur concurrently with thinning operations using the hot-fed technique. However, up to 100 piles per hectare (for small piles only) may be created if concurrent burning during thinning is not possible due to fire weather conditions,
- The Contractor must obtain a burn registration number (BRN) for the fire for the entire Category 3 burn duration (the BRN normally lasts 2 weeks),
- The Contractor must ensure that there is sufficient fireguard around piles while ensuring that the fire is contained in the burn area, and

While the fire is burning and there is risk of escape, the Contractor must ensure an adequate fire suppression system at the burn area.

PILE BURNING and SMOKE MANAGEMENT:

Burning is to be conducted in compliance with the 2019 *Environmental Management Act Open Burning Smoke Control Regulations*[6] (OBSCR). OBSCR contains two parts or Division 1 and Division 2. It is recommended that burning be implemented following OBSCR's Division 2 (Plans for Community Wildfire Risk Reduction). It is also recommended that a custom venting forecast be acquire for optimal use of favourable burning windows.

[4] https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/wildfire-status/fire-bans-and-restrictions/bcws_backyardburning.pdf
[5] https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/wildfire-status/fire-bans-and-restrictions/bcws_resourcemgmt.pdf
[6] https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/152_2019/#division_d1e1441

Direction and Requirements under OBSCR Division 2 for smoke management within a 'high' smoke sensitivity zone is as follows:

District of Mackenzie staff will assist the Contractor in burning under Division 2, including contacting the local MOE Director. Some basic requirements of Division 2 are as follows:

- Burning may occur on days when ventilation forecasting is classified as 'fair' followed by 'good' and with reduced setbacks as compared to Division 1,
- Setbacks are reduced to 50 m from a residence or business and 100m from a school, hospital or community care facility.

Requirements under OBSCR Division 1 for smoke management within a 'high' smoke sensitivity zone is as follows:

- Burning is at least **100m from a residence or business, or 500m from a school, hospital or community care facility**,
- Every reasonable alternative must be used to minimize burning amounts by reducing, reusing or recycling vegetative debris,
- Debris must be piled and seasoned before burning can start. Seasoned debris is defined as:
  - Debris with dry-basis moisture content within 30%, or
  - Debris that has been piled for at least 4 months, or
  - Debris that originated from standing dead timber
- All reasonable efforts must be taken to minimize smoke by following best practices for open burning such as: minimizing soil content, maximizing seasoned vegetative debris, no stumps, and constructing debris piles in a way that maximizes air flow;
- No later than 24 hours in advance of starting the open burning, all reasonable efforts are made to give notification of the location of the open burning to the occupants of all residences, businesses, schools, hospitals and community care facilities within 500 m of the open burning;
- Records of burning must be kept as required in the regulation;
- Within a 'high' smoke sensitivity zone, **burning of each pile(s) can occur for up to *two* consecutive days: start time for burning will be one hour after sunrise (or later) on day 1 and end time will be by 4 pm on the second day**;
- Ignition of new piles or addition of combustible vegetation to existing burning piles must end 4 hours before sunset on the first day of burning,
- The ventilation index must be indicated as 'good' (>54) prior to igniting burn piles on the first day, and burning may continue if ventilation index is 'good' or 'fair' on the second day. If the ventilation index drops to 'poor', open burning cannot continue until ventilation improves.
- Local ventilation must be confirmed by lighting a small test pile before lighting multiple piles. The contract supervisor may halt burning at their discretion if concerns related to public safety or health are identified.

It is the contractor's responsibility to monitor venting and adjust activities accordingly. Smoke should not negatively impact residences adjacent to the proposed treatment area. Further requirements may be imposed, depending on public reaction and smoke conditions at the time of implementation.

CHIPPING/MULCHING: Chipping and mulching on-site dispersal are not fundable activities through the WRR/CRI programs and so therefore the prescribing foresters have not provided explicit guidance for these activities. Further information and additional guidance may be forthcoming.

MASTICATION: N/A

GRINDING: This may be a viable option but ground material must be hauled away (one option is to grind into bins and transport to the CONIFEX plant) and adhere to all fuel loading limits outlined within this prescription.

PRESCRIBED FIRE: N/A

PLANTING: N/A

THER (Firewood): Producing firewood for community members is a preferred than burning this woody residue. If firewood production occurs, it will be left at designated locations accessible to community members as approved by the contract supervisor in order to facilitate its pickup. Piece size will not exceed 1.5 m in length.

AUTHORIZATION AND TIMBER TENURE

The appropriate cutting authorization (Section 52, FLTC) will be processed by the District of Mackenzie prior to project implementation. Firewood cutting permit(s) may also be required.

Park Use Permit: N/A

Road Permit or Road Use Permit: N/A

Other (i.e. local government, utilities, etc.):

J. POST TREATMENT

EXPECTED VEGETATION RESPONSE:

SBSmk2-01/05:
Opening of the canopy may encourage shrub and herb understory growth. Post-treatment shrub/herb response is anticipated to be **Moderate** with thimbleberry, twinberry, highbush cranberry, and fireweed. Increased light conditions may also encourage response of deciduous species such as trembling aspen and birch. Natural regeneration of conifers is anticipated to be **low** and consist primarily of Bl and Sx.

The prescription is expected to achieve the primary fuel management objectives for 10 – 15 years. After this time, it is likely that natural regeneration may create flammable ladder fuels which will increase fire hazard and fire behaviour potential. Forest health factors, both biotic and abiotic, may lead to accumulations of surface fuel loading.

ADDITIONAL TREATMENTS OR MAINTENANCE: It is recommended that a qualified professional complete a wildfire hazard assessment 10-12 years (or after a natural disturbance or major forest health factor) post-treatment to assist in scheduling and prioritization of maintenance activities. Maintenance activities may include additional thinning, brushing, or surface fuel loading reduction.

SILVICULTURE OBLIGATIONS: Do silvicultural obligations apply to the treatment area? Yes **X - only one TU (see below)** No ☐

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

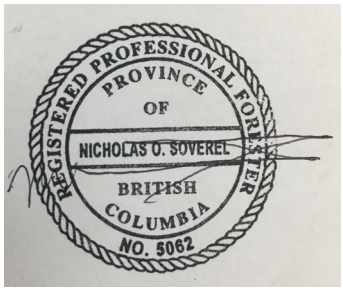
STOCKING STANDARDS: Stocking standards only apply for TU2-MECH (DC-H) where the treatment unit overlaps the McLeod Lake Mackenzie Community Forest (K2M) tenure. The MLMCF Forest Stewardship Plan[7] contains stocking standards applicable to harvest activities for the purpose of fuel reduction and wildfire management. The resulting stand composition post- treatment activities will meet the below identified stocking standards for TU2-MECH.
For all other TUs: Stocking standards are generally inconsistent with fuel management objectives because Forest Stewardship Plans (FSPs) and Woodlot License Plans (WLPs) primarily deal with maintaining future timber production. This fuel management prescription applies the following principles: reducing hazardous coniferous understorey vegetation, decreasing ladder fuels, increasing deciduous understorey shrub and herbaceous plant production, and decreasing crown bulk density. Therefore, reforestation and timber production at the stand level are considered secondary objectives within the context of fire hazard reduction.

TU	Stocking Standard ID	Pref. Spp.	Acc. Spp.	Well Spaced Stem/ha				Minimum Height (m)		Regen Delay	Free Growing (years)
					Max Density						
				TSSpa	Deciduous	Conifer max	MITD (m)	Pref	RTH (%)		
2-MECH (DC-H)	SBSmk2-01/05	At, Act, Ep	-	2,000	No limit	800	2.0	2.0	-	7	20

K. Outstanding Works

- The appropriate cutting authority/firewood permits must be obtained prior to commencement of operations;
  - This will require a written response from the McLeod Lake Indian Band to be included in the application for the timber cutting permit,
- If this FMP is implemented during breeding bird season[8] (late April – mid August)[9], a breeding bird survey must be conducted prior to treatment by a qualified professional;
- Public notification by the District of Mackenzie will occur 30 days before implementation,
- An Access Control Plan signed off by the contract supervisor will be developed before commencement of operations, and
- When and if the contractor plans to conduct any burning, they must notify the District of Mackenzie prior to ignition; in addition, the contractor must obtain a burn reference number from the BC Wildfire Service.

[7] *http://mlmcf.ca/wp-content/uploads/K2M_MLMCF_FSP2_13JUNE2016_Signed.pdf*
[8] *https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/general-nesting-periods/nesting-periods.html#ZoneA*
[9] *https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/general-nesting-periods/nesting-periods.html#ZoneA*

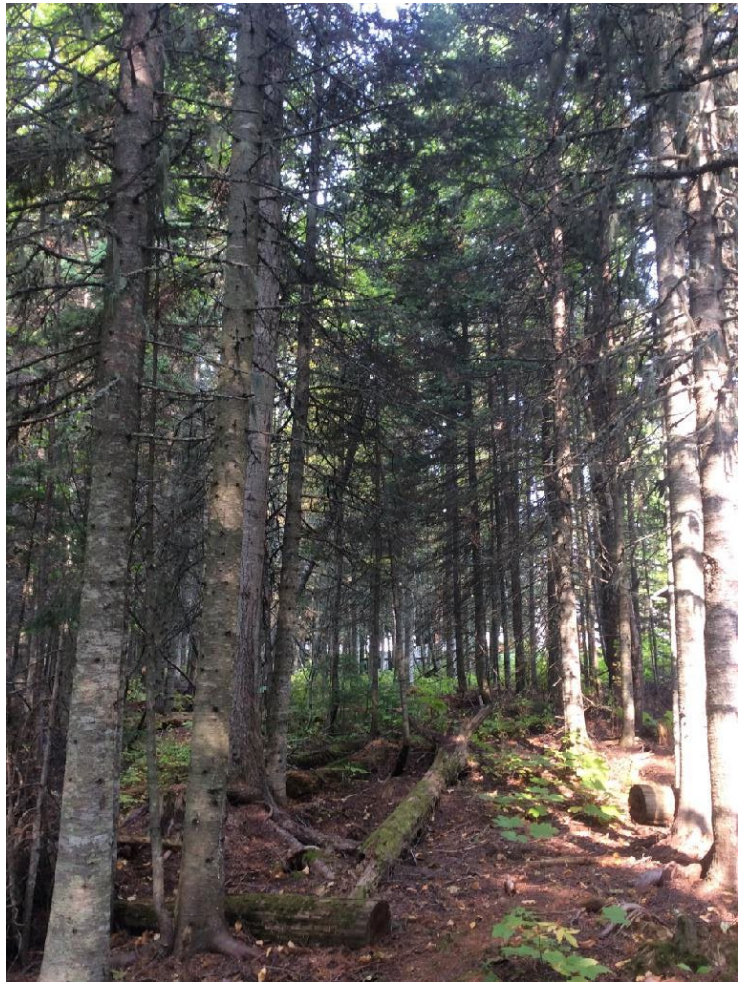
L. ADMINISTRATION	
PREPARATION	
FOREST PROFESSIONAL NAME *(Printed)* Nicholas Soverel	FOREST PROFESSIONAL SIGNATURE 
MEMBER NUMBER 5062	August 16, 2021

M. ATTACHMENTS			
MAPS:	Yes **X** No	FIELD DATA CARDS:	Yes No **X**
WUI WTA Plots and Photos:	Yes **X** No	CRUISE DATA:	Yes No **X**
AIR PHOTOS/IMAGERY:	Yes No **X**	BURN PLAN:	Yes No **X**
MODELING/DATA ANALYSIS:	Yes **X** No	OTHER:	N/A
BROWNS TRANSECT:	Yes No **X**		
TERRAIN STABILITY ASSESSMENT	Yes No **X**	VISUAL IMPACT ASSESSMENT	Yes No **X**
Completed By:		Completed By:	
Date:		Date:	
ARCHAEOLOGY IMPACT ASSESSMENT	Yes No **X**	BIOLOGIST ASSESSMENT	Yes No **X**
Completed By:		Completed By:	
Date:		Date:	
ADDITIONAL COMMENTS: N/A			

Appendix B: Representative Photos

1-MECH (DC-C Mech, DC-E, DC-F)

Plot 105: within treatment polygon DC-C-North/South, young stand of subalpine fir leading:



Plot 215: within treatment polygon DC-C-North/South. Pockets of heavily disturbed areas with L2, L3 stems:

Plot 341: within treatment polygon DC-E-Mech

TU-2-MECH (DC-H-Mech):

Plot 20: Greater proportion of deciduous trees in the overstory

TU-3-MAN (DC-C-Man):

Forest cover within manual-only treatment area:

Appendix C: Fire Behaviour Modeling

LINKS TO INFORMATION ABOUT SOFTWARE PROGRAMS:	
Fuelcalc:	https://www.firelab.org/project/fuelcalc-canopy-fuel-calculator-and-model
Crown Fire Initiation and Spread (CFIS) Model:	https://www.frames.gov/catalog/7374
Critical Surface Intensity Worksheet:	https://www2.gov.bc.ca/gov/content/safety/wildfire-status/prevention/vegetation-and-fuel-management/fire-fuel-management/fuel-management
Canadian Confier Pyrometrics:	https://fireresearch.ca/conifer-pyrometrics/

Block & Stratum	**RESULTS (PRE-TREATMENT)**						**FuelCalcBC-Generated Factors (PRE-TREATMENT)**			**Compiled Surface Fuel Load Plot Data**
	likelihood crown fire (%)	**fire type**	**ROS (m/min)**	**Critical Surface Fire Intensity (kW/m)**	**Wildfire Intensity (kW/m)**	**Flame Length (m)**	**Crown Bulk Density (kg/m3)**	**Canopy Base Height (m)**	**Canopy Fuel Load (kg/m2)**	**Surface Fuel Consumption Class (SFC) (low-med-high)**
TU-1-MECH	78	Passive Crown	9.6	69	2570	2.87	0.083	0.63	1.69	0.47
TU-2-MECH	98	Passive Crown	9.9	26	4452	3.70	0.073	0.33	1.83	0.95
TU-3-MAN	98	Passive Crown	9.9	26	4452	3.70	0.073	0.33	1.83	0.95
NOTE: Results produced from CFIS (Canopy Fire Initiation and Spread model) and Critical Surface Intensity Worksheet (CSI) using FuelCalcBC and Weather/Site Factors. If surface fire is predicted, then Canadian Confier Pyrometrics model is used to determine rate of spread. **TU 1 :** According to CCP: at 14.8 km/hr wind, approx. 25 % of canopy and a max of 0.47 kg/m2 of surface fuel is involved in a passive fire. Based on comparing measured fuel loads with CCP estimates of SFC which use BUI percentile. **TU 2 and 3:** According to CCP: at 14.8 km/hr wind, approx. 30 % of canopy and a max of 0.95 kg/m2 of surface fuel is involved in a passive fire. Based on comparing measured fuel loads with CCP estimates of SFC which use BUI percentile.							**NOTE:** Both overstory and understory trees included in calculations EXCEPT Layer 4 of understory (<1.3 m)	**NOTE:** CBH was used in place of Fuel Strata Gap (FSG) for CFIS predictions	**NOTE:** for crown fires, CFL is used in Wildfire Intensity calcuation	**NOTE:** low class (labelled green) is < 1 kg/m2 of total fuel load (both fine and medium fuels) medium is 1 - 2 kg/m2 (orange), and high is > 2 kg/m2 (red)

Block & Stratum	Surface Fuel Consumption Class (SFC) (low-med-high)	CFIS RESULTS (POST)		Canadian Conifer Pyrometrics Results (POST)	CSI Results (POST)		FUELCALC AND CSI RESULTS (POST)			
		likelihood of crown fire (%)	fire type	ROS (m/min)	Wildfire Intensity (kW/m)	Flame Length (m)	CrownBulkDensity (kg/m3)	Canopy Base Height (m)	Canopy Fuel Load (kg/m2)	Critical Surface Fire Intensity (kW/m)
TU-1-MECH	0.9	5	Surface	2.2	586	1.45	0.027	7.09	0.54	2608
TU-2-MECH	0.9	7	Surface	2.2	586	1.45	0.034	6.49	0.84	2284
TU-3-MAN	0.9	7	Surface	2.2	586	1.45	0.038	6.49	0.94	2284
NOTE: low class (labelled green) is < 1 kg/m2 of total fuel load (both fine and medium fuels) medium is 1 - 2 kg/m2 (orange), and high is > 2 kg/m2 (red)		**NOTE: Results produced from CFIS (Canopy Fire Initiation and Spread model), Critical Surface Intensity Worksheet, and Canadian Conifer Pyrometrics, using FuelCalcBC and Weather/Site Factors**					**NOTE:** Both overstory and understory trees included in calculations EXCEPT Layer 4 of understory (<1.3 m)	**NOTE:** CBH was used in place of Fuel Strata Gap (FSG) for CFIS predictions	**NOTE:** for crown fires, CFL is used in Wildfire Intensity calcuation	

Weather and Site Factors

Block & Stratum	Estimated Fine Fuel Moisture (%)	Wind Speed (km/hr)	Air Temp (°C)	Relative Humidity (%)	Month	Time of Day	Slope (mean %)	Aspect (mean degrees)	Crown Closure (%)
TU-1-MECH	10	14.8	23.9	43	July	1300-1500	6.9	183 (South)	41
TU-2-MECH & TU-3-MAN							9.7	207 (South-Southwest)	27

NOTE: Moisture of fine fuels estimated using weather and site variables for CFIS. Used weather station data to obtain percentiles of relevant variables
LINK TO THE WEBSITE SHOWING WEATHER STATION NETWORK DATA THAT WAS UTILIZED: https://data.pacificclimate.org/portal/pcds/map/

NOTE: assumed to be south if no aspect measured (regard highest risk for precautionary estimates)

Block & Stratum	Percentile used for weather data	Wx station used	Wx station Season and Annual Range	Wx station elevation (m ASL)	Wx station coordinates (lat, long)	Foliar Moisture Content (%)
ALL TUs	**90**	MACKENZIE FS	May 1 - Oct 31; 2006 - 2020	690	lat: 55.3042 lon: -123.1347	85.1

NOTE for Critical Surface Fire: Intensity, FMC calculator from CCP is used (taking Wx station elevation and latitude and percentile date)

Appendix D: FireSmart Recommendations

Background on FireSmart

There are numerous structures located around the proposed treatment areas. These structures are at risk from an approaching wildfire but they also pose a risk as a possible ignition source for wildfires spreading from the camp to the surrounding forests and beyond. FireSmart principles are currently the most accepted forestry practice to protect such structures within the Wildland Urban Interface.

This area is both heavily forested and there are numerous high-value structures, the prescribing foresters recommend that FireSmart principles be employed to all areas surrounding these structures. It is recommended that these FireSmart treatment activities be completed simultaneously to this FMP's treatment activities. However, before any FireSmart treatment commences, a trained Local FireSmart Representative (LFR) will conduct LFR assessments and determine specific recommendations for each structure.

Broad FireSmart Recommendations

The prescribing foresters do not provide any building material recommendations within this Appendix as it is outside the scope of this prescription document. A full assessment by a qualified Local FireSmart Representative will need to be completed in order to make specific recommendations. More information on building materials can be found within the manual: 'FireSmart Begins at Home Manual'[10]. This manual provides information on the vegetation management aspect of FireSmart.

As a helpful guide outlined in text below and in Figure 1, the prescribing foresters provide a broad description of recommended activities for areas surrounding structures, based on the FireSmart manual. The manual states the following vegetation management zones (measured from the footprint of each structure):

Non-Combustible Zone (0-1.5 m) – see Figure 1:
A non-combustible surface should surround the structure including gravel, brick or concrete placed in this Zone. No vegetation is allowed within this Zone.

Priority Zone 1: (1.5 – 10 m) – see Figure 1:
This Zone must only contain deciduous tree or shrubs and very little conifer tree cover. Any conifers retained within this zone will be pruned. Any outbuildings should be built or retrofitted with fire resistant building materials.

Priority Zone 2: (10 – 30 m) and Priority Zone 3: (30 – 100m) -- see Figure 1:
As many of these zones overlap onto Crown land, the recommendations within this Fuel Management Prescription should be sufficient for both Zones 2 and 3.

[10] https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/wildfire-status/prevention/prevention-home-community/bcws_homeowner_firesmart_manual.pdf

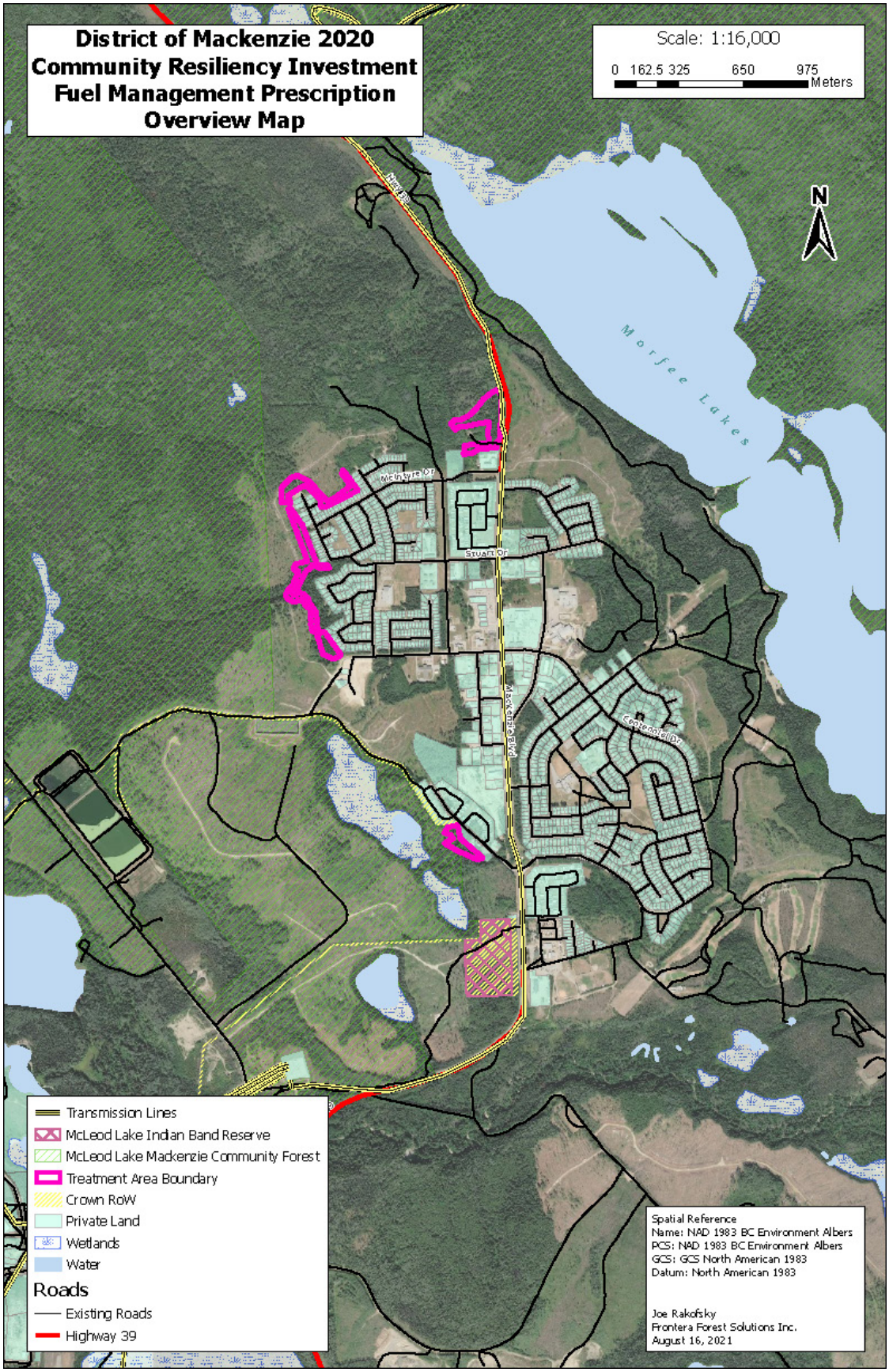

FireSmart Canada
STRUCTURE IGNITION ZONE
Zone 3
30-100 metres
Zone 2
10-30 metres
Zone 1
1.5-10 metres
Non-Combustible Zone
0-1.5 metres
Work with your neighbours in any overlapping priority zones!
Non-combustible Zone
(0-1.5 metres)
Reduce the chance of wind-blown embers igniting materials near your home. A non-combustible surface should extend around the entire home and any attachments, such as decks. Creating a non-combustible surface can be as easy clearing vegetation and combustible material down to mineral soil. To add to your landscape design, use non-combustible materials such as gravel, brick, or concrete in this critical area adjacent to your home. Woody shrubs, trees or tree branches should be avoided in this zone, any that are present should be properly mitigated.
Zone 1
(1.5-10 metres)
Create a landscape that will not easily transmit fire to the home. A FireSmart yard includes making smart choices for your plants, shrubs, grass and mulch. Selecting fire-resistant plants and materials can increase the likelihood of your home surviving a wildfire. Plant a low density of fire-resistant plants and shrubs. Avoid having any woody debris, including mulch, as it provides potential places for fires to start. Storing items such as firewood piles, construction materials, patio furniture, tools and decorative pieces against or near a house is a major fire hazard. Move firewood piles, trailers/ recreational vehicles, storage sheds and other combustible structures out of this zone and into Zone 2. If unable to move, store firewood inside your mitigated garage, shed or other ember resistant structures, create a non combustible zone underneath and for 1.5 metres around trailers/ vehicles and mitigate sheds and other structures to the same standards as those of your home.
Zone 2
(10-30 metres)
If your property extends out to this zone, thin and prune evergreen trees to reduce hazard in this area. Within 30 metres of your home, selectively remove evergreen trees to create at least 3 metres of horizontal space between the single or grouped tree crowns and remove all branches to a height of 2 metres from the ground on the remaining evergreen trees. If possible, pruning trees up to 100 metres from your home (Zone 3) is recommended. Regularly clean up accumulations of fallen branches, dry grass and needles from on the ground to eliminate potential surface fuels. Consider seeking the guidance of a forest professional with wildland fire knowledge on appropriate management options for this zone.
Zone 3
(30-100 metres)
Taking FireSmart actions in Zone 3 on your property will influence how a wildfire approaches your home. You can change the dynamics of wildfire behaviour by managing vegetation within this zone. Look for opportunities to create a fire break by creating space between trees and other potentially flammable vegetation. Thinning and pruning is effective here as well. These actions will help reduce the intensity of a wildfire. Consider seeking the guidance of a forest professional with wildland fire knowledge on appropriate management options for this zone.
BRITISH COLUMBIA FireSmart
Begins at Home

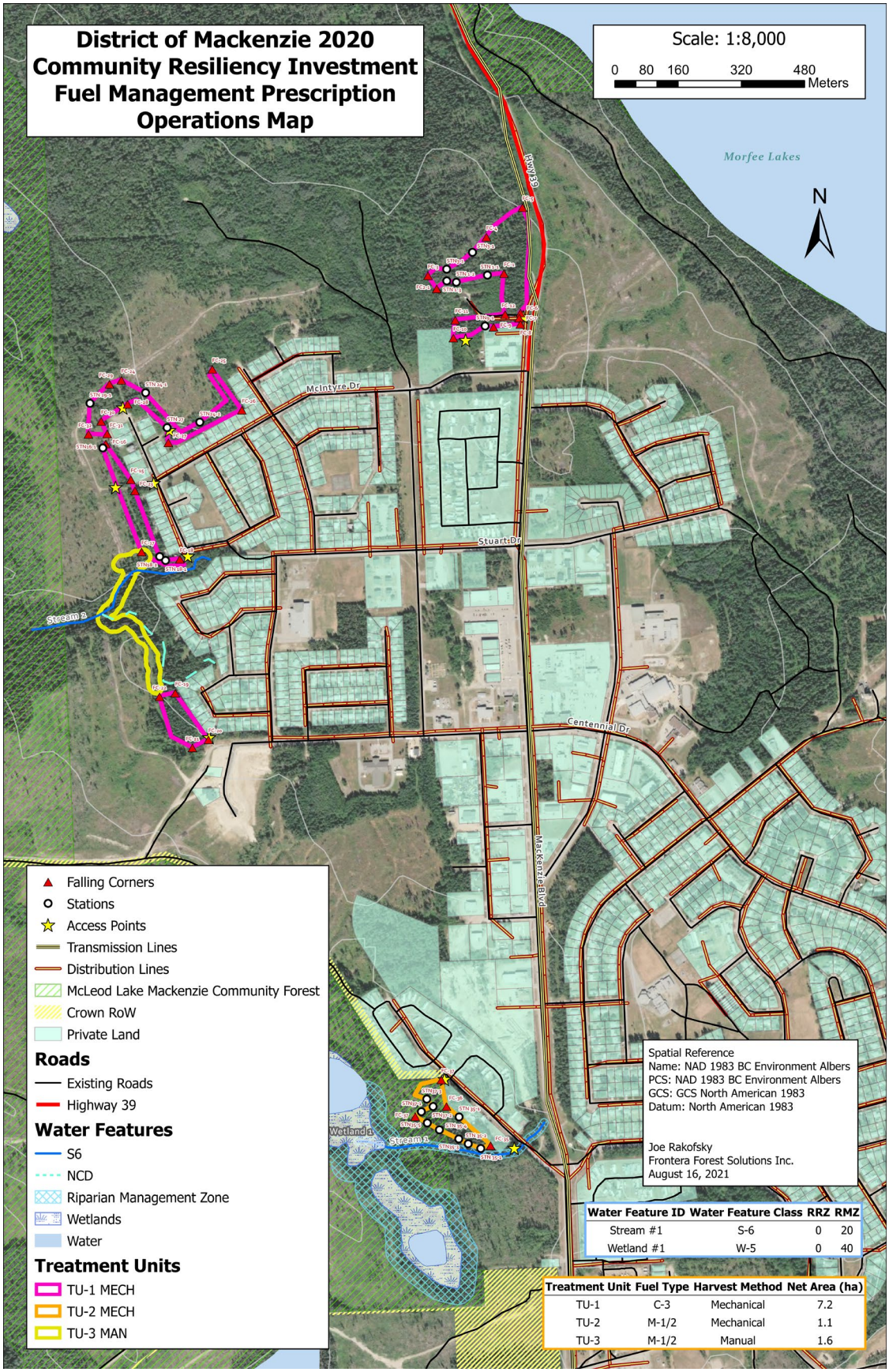
Figure 1.

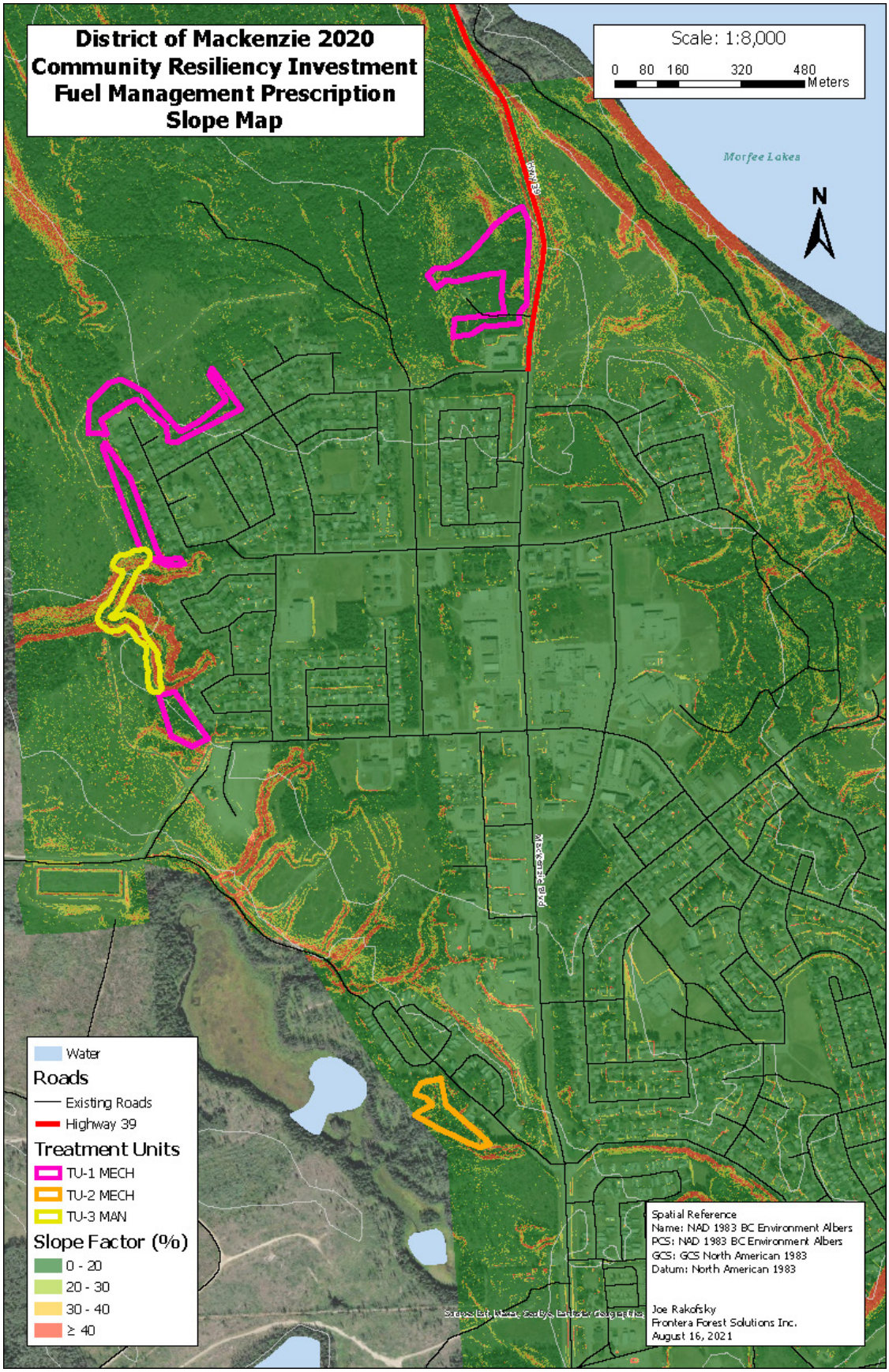
ATTACHMENT 2

Treatment Unit Maps for TU #1, 2 & 3

Appendix A: Maps




District of Mackenzie 2020
Community Resiliency Investment
Fuel Management Prescription
Operations Map
Scale: 1:8,000
0 80 160 320 480
Meters
N
Morfee Lakes
Hwy 39
McIntyre Dr
Stuart Dr
Centennial Dr
Mackenzie Blvd
Stream 2
Stream 1
Wetland 1
Falling Corners
Stations
Access Points
Transmission Lines
Distribution Lines
McLeod Lake Mackenzie Community Forest
Crown RoW
Private Land
Roads
Existing Roads
Highway 39
Water Features
S6
NCD
Riparian Management Zone
Wetlands
Water
Treatment Units
TU-1 MECH
TU-2 MECH
TU-3 MAN
Spatial Reference
Name: NAD 1983 BC Environment Albers
PCS: NAD 1983 BC Environment Albers
GCS: GCS North American 1983
Datum: North American 1983
Joe Rakofsky
Frontera Forest Solutions Inc.
August 16, 2021
Water Feature ID | Water Feature Class | RRZ | RMZ
Stream #1 | S-6 | 0 | 20
Wetland #1 | W-5 | 0 | 40
Treatment Unit | Fuel Type | Harvest Method | Net Area (ha)
TU-1 | C-3 | Mechanical | 7.2
TU-2 | M-1/2 | Mechanical | 1.1
TU-3 | M-1/2 | Manual | 1.6


District of Mackenzie 2020
Community Resiliency Investment
Fuel Management Prescription
Slope Map
Scale: 1:8,000
0 80 160 320 480
Meters
Morfee Lakes
N
Mackenzie Blvd
Water
Roads
Existing Roads
Highway 39
Treatment Units
TU-1 MECH
TU-2 MECH
TU-3 MAN
Slope Factor (%)
0 - 20
20 - 30
30 - 40
≥ 40
Spatial Reference
Name: NAD 1983 BC Environment Albers
PCS: NAD 1983 BC Environment Albers
GCS: GCS North American 1983
Datum: North American 1983
Joe Rakofsky
Frontera Forest Solutions Inc.
August 16, 2021