TOWARDS A PEACE-LIARD PRESCRIBED FIRE PROGRAM: PART B– TECHNICAL AND OPERATIONAL PLAN

MAY 31, 2019

PREPARED FOR THE BC MINISTRY OF FORESTS, LANDS, NATURAL RESOURCE OPERATIONS AND R.D.
IN PARTIAL FULLFILLMENT OF CONTRACT # GS18FSJ0006
SHIFTING MOSAICS CONSULTING
FORT NELSON BRITISH COLUMBIA CANADA

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BC Government statement: This report provides recommendations to government for a strategic approach to implementing prescribed fire in northeast British Columbia. It does not represent a position or program of government, and is intended to support discussions with Indigenous peoples and stakeholders.

EXECUTIVE SUMMARY

The Peace-Liard Prescribed Fire Program (P-LPFP) is a critical part of the landscape of northeast British Columbia. For decades, prescribed fire has been applied to the land to support wildlife and its habitat, to improve quantity, quality and access to forage for livestock, to reduce fuel load resulting from forestry activities, and in some cases to support cultural and traditional values. In 2017, the Fish and Wildlife Section of the BC Ministry of Forests, Lands, and Natural Resource Operations secured funding to critically review and reposition the prescribed fire program into an evolved version to reflect current scientific knowledge, incorporate Indigenous communities, stakeholders, industry and parties with a vested interest. In developing these works together, collaborating to mobilize all knowledge into a Program which meets multiple values and goals, the product is an evolved version of the foundational program which has been implementing prescribed fire since the middle of the past century, with a concentrated effort commencing in the late 1970's by Dr. J. Elliott and staff of the Fish and Wildlife Branch in support by the Northern Guides Association and Northeast BC Wildlife Fund.

The P-LPFP is the most important program for wildlife and its habitat in northern BC. In this Technical and Operational Plan, the Peace-Liard Fire Matrix is developed (historical/current and future) and demonstrated in how fire can be strategically distributed through space and time across a broad landscape to meet multiple values and to be tracked and monitored to measure success. It is clear that even those areas we term non-burnable (due to lack in fuel load and receptiveness or because they are critical for communities, culture, and endangered species amongst others) need to have recent time since fire or other disturbance in this pyrogenic landscape. Not included in this technical and operational plan are: education strategy, communication strategy, or approval to conduct prescribed fires unless in writing from the appropriate Government Decision Makers.

Acknowledgements

The P-LPFP has been developed through a collaborative approach blending western science with traditional and historical knowledge designed in partnership between the Fish and Wildlife Section of the BC Ministry of Forests, Lands, Natural Resource Operations, and Rural Development and Shifting Mosaics Consulting. This project was financially supported by the Habitat Conservation Trust Foundation.

The authors are thankful for the extensive participation, guidance, and knowledge shared during this process with particular acknowledgement to the following sections of the BC Government including but not limited to: Range, Parks, Stewardship, Fish and Wildlife, Ecosystems, Caribou, and the BC Wildfire Service. The authors are grateful for the open and enthusiastic participation from resident hunters, stakeholders, and Indigenous community members. The authors are grateful to the wildland and prescribed fire science community across North America, Australia, and Africa for their support in the development, review, guidance, and scientific foundation so generously offered to our team. Standing on the shoulders of giants, we acknowledge all those who have contributed time and effort to the foundations of the Peace-Liard Prescribed Fire Program over the past century. GIS Analysis led by: Roberto Concepcion, Shifting Mosaics Consulting/iMap Solutions.

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"The one constant was fire itself. It could not be bought off, legislated away, carbon-traded into insignificance, or badgered into obedience. A warming Earth could only enhance the habitat for fire. However Canadians might wish to conceive their relationship to fire, the future promised more flame, not less." - S. Pyne 2007

INTRODUCTION

Northeast British Columbia is a pyrogenic landscape resulting from the spatial and temporal distribution of fire. The ecological process of fire across the Region is critical for ecosystem integrity and proper function, amongst other values supported, maintained, and enhanced by fire. Over the past century, prescribed fire has been implemented to maintain and promote forage and browse for domestic and native herbivores in concentrated areas that varying spatial extent (Leverkus 2015, Leverkus *et al.* 2017). Previous documentation exists pertaining to the implementation of prescribed fire by the BC Government (Goddard 2011) and the challenges/concerns around it (Lousier *et al.* 2009), however, the Peace-Liard Prescribed Fire Program is a fundamental paradigm shift in the planning process to one which has incorporated Indigenous communities, stakeholders and industry, scientists and interested parties with critical staff from the Northeast Region of the BC Government. Incorporating past prescribed fire work by the BC Government and others has been an important component to this process resulting in an evolution of the Program with greater breadth and depth that is needed in a landscape of increased cumulative interactions and effects amongst a society with far-reaching goals, needs, and requirements from the natural resources in the Region. This document provides the technical and operational plan which is supported by Part A, the strategic and rationale document.

FIRE

The fire triangle is often used to describe the three fundamental variables of fire which must be present for a fire to exist: oxygen, heat, and fuel (Pyne *et al.* 1997). Fire behaviour is "the manner in which fuel ignites, flame develops, fire spreads and exhibits other related phenomena as determined by the interaction of fuels, weather, and topography" (Merrill and Alexander 1987). Fire behaviour is influenced by the fire behaviour triangle of fuel, weather and topography (Pyne *et al.* 1997) with fuel being the primary variable which can be modified. There are six main physical characteristics of fuels that affect fire behaviour: quantity, size, arrangement, continuity, chemical content, and moisture content (Hinton Training Center 2016). There are also six major factors that affect dead fuel moisture content including: precipitation, relative humidity, air temperature, wind speed, topography, and soil type (Hinton Training Centre 2016).

There are modifications that can be made to influence the fire regime including: influencing human-caused ignitions through education, fire bans, and industrial shutdowns (Leverkus *et al.* 2016). There are four main factors which influence fire activity including weather/climate, fuels, ignition agents and humans (Johnson 1992, Flannigan and Wotton 2001) with weather/climate (i.e. relative humidity, temperature, and wind speed) being the most important natural factor which influences wildland fire (Wright and Bailey 1982, Flannigan and Wotton 2001, Hely *et al.* 2001).

Prescribed fire can reduce the risk and hazard of wildfire. Omi (2015) suggests that fire risk is managed by eliminating or reducing the source of ignition and fire hazard is reduced by removing or modifying fuels to reduce flammability during high or extreme fire danger conditions (Figure 1). Prescribed fire achieves the modification of fuel through the implementation of prescriptions which outline objectives, pre-determined conditions to meet the objectives, ignition and control parameters, and additional considerations such as values at risk, smoke management, and safety/communication plans as per the BC Prescribed Fire Burn Plan procedure.

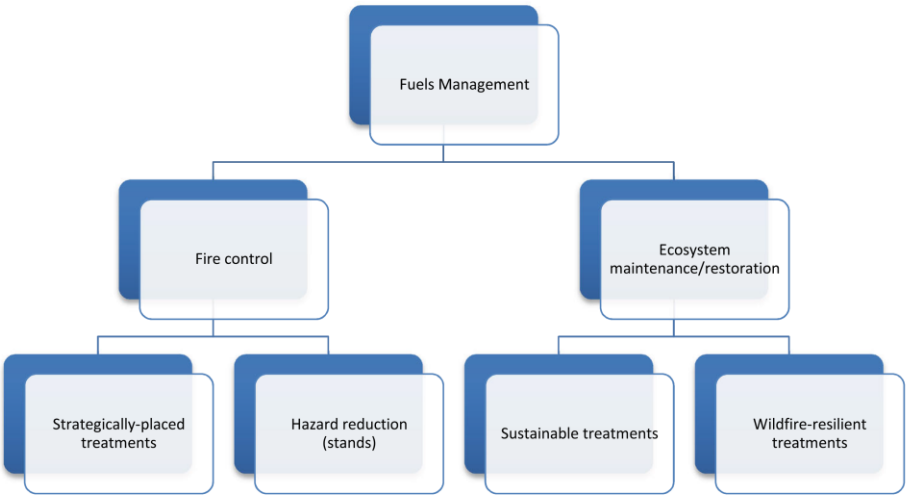


Figure 1 Fuel management organization chart as presented by Omi (2015) showing two arms of fire management: fire control and fire as an ecological process. Vegetation can also be viewed through a similar lens in that it is fuel which carries fire while it also provides habitat through structure and forage/browse/nutritional requirements.

"Fire has been an important factor in the evolution and development of many range ecosystems. Today, prescribed burning is recognized as a tool useful for manipulating vegetation, often accomplishing several management objectives simultaneously. Successful use of prescribed burning is based on an understanding of the ecological effects of fire, fire-weather-fuels interactions, and proper management of areas treated with fire." – R.P. Young 1983

METHODS

Prescribed Fire Units

A variety of methods were used to assist the development of the Peace-Liard Prescribed Fire Program – Part B Technical and Operational Plan. Initial engagement sessions occurred across the Region through the Fall and Winter of 2017-2018. Engagement questions were developed and circulated where appropriate as noted in the Appendix. The engagement sessions included a presentation of the current status of prescribed fire in the Region by the team of the Fish and Wildlife Section and Shifting Mosaics Consulting. Following the presentation was often a broad discussion about the co-development of the Strategic and Technical/Operational Plan with all participants involved and which often resulted in the documentation of oral history and spatial areas of historical and/or recommended Prescribed Fire Units (PFUs) were documented following the procedure as developed by our team and noted in the Appendix. Additional documentation was received via email as Google Earth Keyhole Markup Language (KML) files with the associated spreadsheet that formed the attribute table of the developed corresponding shapefile. These shapefiles were mapped using ESRI Arc10.3, ESRI ArcGIS10.5 and QGIS. Maps were produced which were then made available to the relevant parties as appropriate. The PFUs were identified as burnable or non-burnable and have been developed into shapefiles.

GIS Database

We acquired and developed over 70 shapefiles through the DataBC Warehouse Catalogue, Oil and Gas Commission, Treaty 8 Tribal Association, Fish and Wildlife Section, other Government Branches, and ArcGIS. The data was clipped to Region 7B as identified by the BC Government, and analyzed over three scales: Region 7B, the Natural Disturbance Units, and Landscape Unit within Region 7B. We developed a spatial database and pdf toggle maps for internal use to review prescribed fire units and the surrounding values. A complete listing of the dataset can be found within the Appendix. It is recommended that these datasets be reviewed annually for currency. Furthermore, additional PFUs may be added through time as more analyses of spatial distribution of wildlife and desired heterogeneity objectives for the landscape are refined.

Telemetry and distribution data was acquired and analysed using Minimum Convex Polygons (MCPs) and the 95 percent kernel isopleth from the Kernel Density Estimate (KDE) as derived through Hawthorne's tools using ArcGIS9.3, ArcGIS10.1, ArcGIS10.3, ArcGIS10.5, and QGIS (Anderson *et al.* 2005, Leggett 2006, Compton *et al*. 2007, Laver and Kelley 2008, Girard *et a*l. 2013a, 2013b). KDEs were generated with a bivariate normal kernel and single parameter smoothing factor of 1000. The raster cell size used was 100 with 1,000,000 scaling factor. The 95 percent kernel isopleth was used to analyze selection and use on a fine scale (Bingham and Noon 1997, Anderson et al. 2005, Kie et al. 2010, Worton 1989). Similar analyses were conducted by Lousier *et al.* 2009 (pp. 14). These data will be incorporated in the GIS database used for internal review.

Fire histories for three landscape scales (regional, natural disturbance unit, and watershed) were developed following the same methodology as Leverkus 2015 and Stocks *et al.* 2003. The regional scale was analysed using the northeast regional boundary (Peace Region 7B) as determined by the Government of British Columbia (Province of British Columbia 2013). Nested within the regional

boundary are the Natural Disturbance Units (NDUs) as determined by the Government of British Columbia, mapped in 2011 (BC Government 2014). Landscape Units within the regional boundary were accessed through the Data Distribution Service of Data BC.

We used Digital Elevation Models (DEMs) for the three scales and we performed analyses for aspect to develop topoedaphic classifications which would compare the distribution of fire (prescribed and wildfire) across aspect classes. Aspect was classified into nine classes from the DEMs (north, northwest, northeast, south, southwest, southeast, west, east, flat) as developed by ESRI.

Two wildfire datasets were acquired from the Wildfire Service of the Government of British Columbia: wildfire polygon dataset and wildfire point dataset. The perimeter polygon dataset was selected for analysis because it is more accurate and reliable than the point dataset primarily though preliminary analyses suggested similar trends. A prescribed fire dataset was acquired from the BC Ministry of Environment which provided data on prescribed fires conducted by the government from 1980 to 2008 so that we could separate prescribed fire from other fires. Some areas burned multiple times but only the most recent time since fire is reported. There were 88 occurrences within the prescribed fire dataset that lacked a fire year. In order to attempt to verify the data, we compared the historical wildfire point data, acquired from DataBC, to the occurrences lacking a year. We know the fire datasets are limited based on resources available to verify and confirm ignitions and spread over the years. While these data surely include errors it is the best approximation of fire patterns over the past 95 years. In order to supplement these layers, we conducted numerous interviews and engagement sessions with Indigenous communities, stakeholders, and other interested parties all with knowledge of prescribed fire boundaries and units.

We spatially analysed the two data sets as per Leverkus 2015 to determine the total area burned from 1922-2018 using ESRI ArcGIS10.5, QGIS, Microsoft Access, and Microsoft Excel. We then derived the total burnable area (ha) and non-burnable area (ha). Burnable area was classified as area available for fire (receptive vegetation, rangelands, etc.) and designated as category 1. Non-burnable area was classified as area not desired for fire (communities with a 2km buffer, cutblocks, agriculture, recreation areas, high elevation winter range, alpine ski areas, road right of way, well sites and facilities, forest tenures, rock/rubble, exposed land, snow, ice, water, road surfaces, boreal caribou cores) and designated as category 0. While this represents the best known distribution of burnable versus non-burnable area, in a changing climate with warming temperatures, there is likely to be an increase in burnable area through time given an increase in available fuel which is currently classified as non-burnable as it is below snow or ice. The vegetation criteria used for the analysis of non-burnable includes: level 1 (non-vegetated), level 2 (land), and level 3 (wetland – snow/ice, rock/rubble, and exposed land; upland – snow/ice, rock/rubble, and exposed land; alpine – snow/ice, rock/rubble, and exposed land).

We developed matrices as per Leverkus 2015 and Leverkus *et al.* 2017 which provided the distribution of fire across the burnable landscape at three scales. The areas are represented in hectares and as a percent of the total available burnable landscape at each scale. The primary datasets analysed were polygon shapefiles. We did not add additional buffering to the data, except for a 2km radius around communities as commonly practiced with the FireSmart method. We did not include points or lines in the non-burnable dataset as more discussion is required on determining buffering distances in light of fuel type and continuity in the areas surrounding the points and lines.

Further analyses and modeling could include buffered point and line feature datasets, variable buffering distances, and additional datasets not identified in the original analysis modeling could occur with

current datasets including additional and refined burnable and non-burnable areas. As fire and other disturbances occur, the burnable and non-burnable landscape will also shift through space and time, therefore continual feedback into the GIS database will occur using the same methodology and processing queries. Significant discussion has occurred around buffering: what distance to buffer, which features to buffer, the composition of the buffering area (continuous fuel type from surrounding vegetation matrix), and the tension between incorporating fire across the whole landscape including areas that may eventually be receptive to fire, which currently have a longer time since fire than other areas. Initial thinking was to buffer the non-burnable features by 2km in light of the commonly accepted spotting distance and ember and firebrand transport amongst the wildland fire community and the original 2003 FireSmart manual as contributed by M.E. Alexander to I. Pengelly of Parks Canada who wrote the spotting section of the manual (Note: Alexander 2006 regarding maximum spot fire distances). In their recent publication, Johnston and Flannigan (2018) employed the maximum buffering distance of 2,400m in hazardous fuel conditions and 1,200m in a mixedwood stand. As stated by Johnson and Flannigan, they selected the 2,400m maximum buffer distance because it is frequently used in WUI mapping and is the federally accepted standard representing the distance a wildland firebrand may travel to ignite a structure.

Alexander and Cruz (2006) suggest that in a wildlife fire setting, models demonstrate that most spot fires occur ahead of the advancing crown fire and are generally overrun before they have a chance to develop and increase the fire's spread rate. They also state than "when fire environment conditions are uniform and winds aloft are favourable for strong convection column development or large-scale horizontal fire-induced vortices exist (Lee 1972), spotting can contribute to the overall spread and growth of crown fires provided the spot fires are able to burn independently of the main fire front" (Alexander and Cruz 2006). This discussion is relevant when strategically considering values at risk and non-burnable areas, or areas and features on the landscape where the decision has been to protect them from fire. Having defendable space, where fire suppression activities can reasonably occur, and maintaining fire absorbent landscapes are two practice achievable with prescribed fires which could protect areas to be kept free of fire, however, caution must be exercised not to enter what some fire scientists term the "fire drought" or severe lack of fire across the landscape which increases the risk and potential for catastrophic wildfire.

Expanding on the discussion of firebrand and ember transfer may be less critical for prescribed fires in the general sense as they should be ignited, monitored, and located within a predetermined boundary in known fire weather indices. It is more critical when determining buffering distances around areas or values at risk that require protection from fire. Modeling spotting distances and considerations has been conducted and could contribute to this discussion greatly (Alexander *et al.* 2004 and Albini *et al.* 2012). Personal communication with M.E. Alexander (2018) has brought forward this need for further investigation and discussion around buffering features versus allowing fire through them in a less aggressive manner than summertime crown fires of high intensity. It is an identified knowledge gap amongst others regarding interactions with fire (Alexander 2000). Furthermore, what was once perceived as a natural barrier to fire such as aspen stands in the boreal forest may no longer act as such in a changing climate (Alexander 2010). There will be continual need for further interdisciplinary fire research particularly in the boreal (Note: Cruz *et al*. 2014). Further to consideration around buffering important features across the Region and integrating fire as a management strategy to protect them, the FireSmart manual titled 'Protecting your community from wildfire" – Second edition, Second printing by Partners In Protection is an excellent resource to assist in the WUI and WII.

"Research is quite clear that climate change will create conditions that will contribute to more large forest fires throughout most of Canada. We, therefore, expect that agencies will soon experience more and more of these 'extreme' years. Years that challenge and overwhelm current levels of suppression will become more the norm…. Through this next century, it is reasonable to expect that the forests of Canada will see more fire, and the values we have in the forest will be threatened more frequently. How we adapt to this increased presence of fire must include more than simply relying on fire suppression. It requires a rethinking of how much fire we can live with within our forests" - Flannigan and Wotton 2008

TECHNICAL PLAN

Application Process

During the course of the development of the Strategic and Technical/Operational Plans, thirteen values were identified as important considerations and results of the strategic application of prescribed fire. The following questions were developed to assist the Decision Maker during the review process for each prescribed fire unit, however, the submission of an application does not guarantee approval of funding nor approval of the prescribed fire burn plan.

1. Does your proposed Rx fire meet the 13 Rx fire values? Check the ones that apply. It is expected that these will be expanded upon and defined in the objectives section of your Rx Fire Burn Plan.

__ Reducing fuel loads	Forest fuels can accumulate to levels that can increase wildfire severity, prescribed fires can reduce fuel accumulation reducing fire spread and intensity.
___ Removing logging debris	Prescribed fire may be a tool to remove woody debris after forest harvest.
___ Silviculture preparation	Prescribed fire may be a tool to support pine regeneration or site treatment prior to planting.
___ Reduce vegetation competition	Periodic fires can reduce deciduous tree growth encouraging coniferous tree growth.
___ Wildlife habitat	Certain wildlife habitats may be enhanced or maintained through prescribed fire.
__ Control insects/disease	Targeted use of prescribed fire may reduce the spread of insects or diseases that impact forest or range health.
__ Forage/browse for herbivores	Prescribed fire can reduce shrub encroachment, increase palatability, nutrient density, and biomass production.
__ Aesthetic enhancement	Properly located prescribed fires can maintain recreational aesthetic values by maintaining open stands, encouraging annual plant growth, or enhancing wildlife species diversity.
__ Access	Prescribed fire can reduce understory vegetation improving safety and access for forestry crews and livestock.
__ Support fire-dependent species	Certain species require fires to propagate and thrive in fire-disturbed environments.
__ Nutrient cycling	Prescribed fires can accelerate the release of nutrients supporting rapid vegetation growth post-burn.
__ Species/Ecosystems at Risk	Certain species and ecosystems at risk may benefit from prescribed fire to maintain the ecosystem at a specific seral state.
__ Cultural values	Archaeology, First Nation sites, etc.

2. Have you completed the 14-page Prescribed Fire Burn Plan? Please attach.
3. If you are proposing to conduct a prescribed fire in a BC Park and/or Protected Area, have you completed the required Impact Assessment documents? Please attach.
4. Please submit appropriate scale shapefiles or .kmz/.kml files of the proposed prescribed fire unit and boundaries with the attached spreadsheet completed (community knowledge form).
5. If you have completed engagement activities with First Nations, tenure holders, etc., please include the record and results of your engagement.
6. Please provide copies of the following documentation:
    - S.A.F.E. certification
    - WCB
    - Liability insurance
    - Documentation of certification, expertise, and prescribed fire experience
7. Please provide additional funding sources and a list of partners in this proposed prescribed fire where appropriate and applicable.
8. Budget and requested amount if applying for funding as per the Rx Fire Proposed Budget 2018 spreadsheet.

Rx Fire Proposed Budget 2018

Category	Description (per unit cost, describe item)	Total cost	In-kind or partner funding	Amt requested from FLNRO
Materials and supplies				
Transportation				
Helicopter				
Fixed wing				
Truck				
Other:				
Wages/salaries				
Other				

Review Process

The processes of applying for, reviewing, funding, and approving prescribed fire in the Region can be considered as complex, however, we present the following processes as a path forward in ensuring fire is distributed appropriately across the Region to meet multiple values.

1. Application Package – 2 streams for submission

Stream 1 – Resource support through Fish and Wildlife

Application packages developed by prescribed fire proponents including First Nations, Indigenous communities, range tenure holders, forest tenure holders, and others are submitted to the Fish and Wildlife Section Head for review.

Stream 2 – Tenure holder range management

Generally, application packages were submitted to the Range Program and depending if the units were inside or outside a BC Park, they would also include a Level 1 Impact Assessment or not. See appendix for former processes used by the Fort Nelson District.

2. Selection Rubric

As part of the review process internal to the BC Government, the following selection rubric has been developed to assist reviewers and Decision Makers. This scoring rubric is designed to assist in the selection of prescribed fire projects for the Peace-Liard Prescribed Fire Program. The intent of this scoring rubric is to provide transparency to both applicants and reviewers, and to systematically and objectively assess applications. Applications that more broadly address values, provide robust documentation, and demonstrate clear evidence for success will ultimately score higher.

For each of the 24 'Criteria for Consideration', reviewers are to place a check mark (✓) if the application is weak, moderate, strong, or excellent in how the project addresses or presents that specific criteria in the corresponding cell for that criteria and score. These 4 scores are worth 1, 2, 3, and 4 points respectively. After the reviewers have assessed all 24 'Criteria for Consideration', they should then enter the points for each criteria in the final column 'Score' column. A total of 24 'Criteria for Consideration' worth a maximum of 4 points each yields a maximum score of 96. Reviewers can then take the score, divide by 96, then multiply by 100 to calculate the % Score. For example, if an application does an excellent job in how it will address 'Reducing fuel loads', then the reviewer would put a check mark (✓) in the cell under 'Excellent (4 pts)' which would then correspond to a '4' in the next cell to the right in the 'Score' column. For another example, consider that an application has a final score of 88, then divide 88 by 96 (88/96) which equals 0.9166667 and then multiple by 100 for a % Score of 91.7.

Score explanations/considerations:

- **WEAK:** Application **does not** address criteria at all, materials **not provided**, or **no evidence** for the criteria or for success.

- **MODERATE:** Application does not address criteria directly but language **alludes to the criteria more indirectly** OR does address it directly but some **details lacking**, materials provided but **details lacking**, or evidence for the criteria is provided but **development is weak to moderate** at best.

- **STRONG:** Application **addresses criteria directly** with sufficient details, materials provided have **all necessary details**, and evidence for the criteria is provided and **clear with evidence for success**.

- **EXCELLENT:** Application **addresses criteria directly with in-depth details**, materials provided have **all necessary details** with clear evidence for success, and evidence for the criteria is provided, clear, and **exceeds expectations to ensure a high level of success** for each criteria.

Criteria for Consideration	Weak (*1 point*)	Moderate (*2 points*)	Strong (*3 points*)	Excellent (*4 points*)	Score
VALUES					
1. Reduce fuel loads					
2. Remove logging debris					
3. Silviculture preparation					
4. Reduce vegetation competition					
5. Enhance wildlife habitat					
6. Cultural value					
7. Control insects/disease					
8. Improve forage for herbivory					
9. Aesthetic enhancement					
10. Improve access					
11. Support fire-dependent species					
12. Nutrient cycling					
13. Species/Ecosystems at risk					
DOCUMENTATION					
Burn Plan complete?					
Other documents (required Impact Assessment Documents, engagement with First Nations, engagement with tenure-holders, evidence of other engagement (or describe the lack of need)?					
Shapefiles submitted (.kmz or .kml files)?					
Community Knowledge form (spreadsheet)?					
Documentation of certifications, experience, training, insurance?					
EVIDENCE FOR SUCCESSFUL IMPLEMENTATION AND COMPLETION OF THE PROJECT					
Training					
Experience					
Additional funding					
Equipment					
Partnerships					
Budget					
OVERALL SCORE					
% SCORE (DIVIDE OVERALL SCORE BY 96 THEN MULTIPLY BY 100)					

'Criteria for Consideration' explanations:

VALUES

Reducing fuel loads – *reduce accumulated fuels which will reduce fire spread and intensity*
Removing logging debris – *remove woody debris left from forest harvest*
Silviculture preparation – *support pine regeneration or prepare site for planting*
Reduce vegetation competition – *reduce deciduous tree growth and encourage conifer tree growth*
Enhance wildlife habitat – *certain habitats will be enhanced or maintained*
Cultural values – *examples include archaeology, First Nations, etc.*
Control insects and/or diseases – *fire will reduce the spread of insects and/or diseases that negatively impact forest health*
Improve forage for herbivory – *reduce shrub encroachment, and increase quality and availability of grazing and browsing plant species*
Aesthetic enhancement – *maintain recreational aesthetic values including open stands, annual plant growth and wildlife species diversity*
Improve access – *reduce understory vegetation improving safety and access for forestry crews and livestock*
Support fire-dependent species – *the propagation and thriving of species that require the fire disturbance*
Nutrient cycling – *accelerate the release of nutrients and enhance nutrient availability to encourage rapid vegetation growth post-burn*
Species/Ecosystems at risk – *benefit species, species assemblages, or ecosystems at risk that may benefit from fire to maintain a particular seral state*

DOCUMENTATION

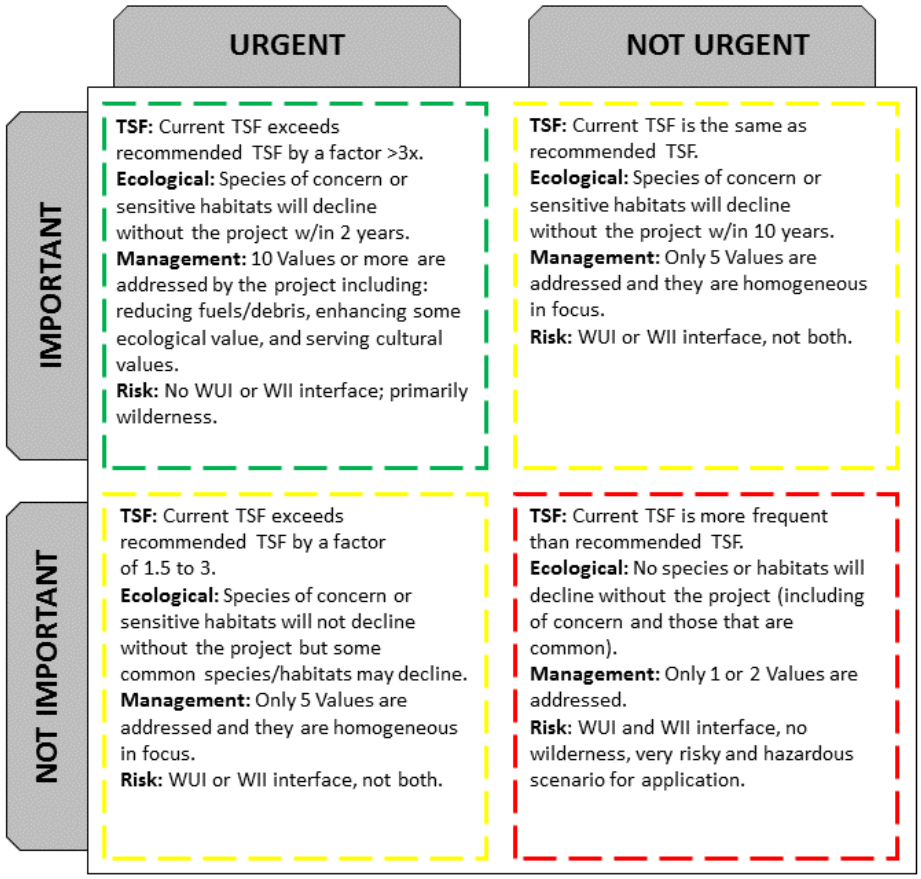
Burn Plan complete – *14 page burn plan is attached; score can vary due to level of completeness*
Other documents – *Impact assessment documents for BC Parks or protected areas, engagement with FN or tenure holder, etc. (or described as not needed)*
Shape files submitted – *files showing the boundary of proposed burned units in .kmz or .kml format*
Community knowledge form – *spreadsheet to accompany shape files*
Documentation of certifications, experience, training, insurance? – *SAFE certification, WCB, liability insurance, list of burning experience and training, etc.*

EVIDENCE FOR SUCCESS

Training – *level/quality of any formal or on-the-job training that demonstrates evidence for safe and effective implementation*
Experience – *level/quality/breadth of experience that demonstrates evidence for safe and effective implementation*
Additional funding – a*dditional financial or in-kind resources that will ensure safe and effective implementation*
Equipment – *appropriate equipment available for ignition and suppression needs*
Partnerships – *demonstrated partnerships that will enhance safety and efficacy of prescribed fires*
Budget – *realistic budget that is both accurate and sufficient for safe and effective implementation*

3. Urgent-Important Matrix

When reviewing the proposed sites for prescribed fire, consider the importance and urgency of the project relative to (1 – TSF) how the recent fire history of the site aligns with its historical fire history regime, (2 – Ecological) how the project will address species of concern and sensitive habitats in respect to short-term (< 2 year) and mid-term (2 to 10 years), and long-term (> 10 years) time frames, (3 – Management) how the project addresses the number and composition of prescribed fire values, and (4 – Risk) relative to risk for wilderness, WUI, and WII attributes of the proposed site. Use either the completed form here, or turn the sheet over and use the blank form on the back (or both).



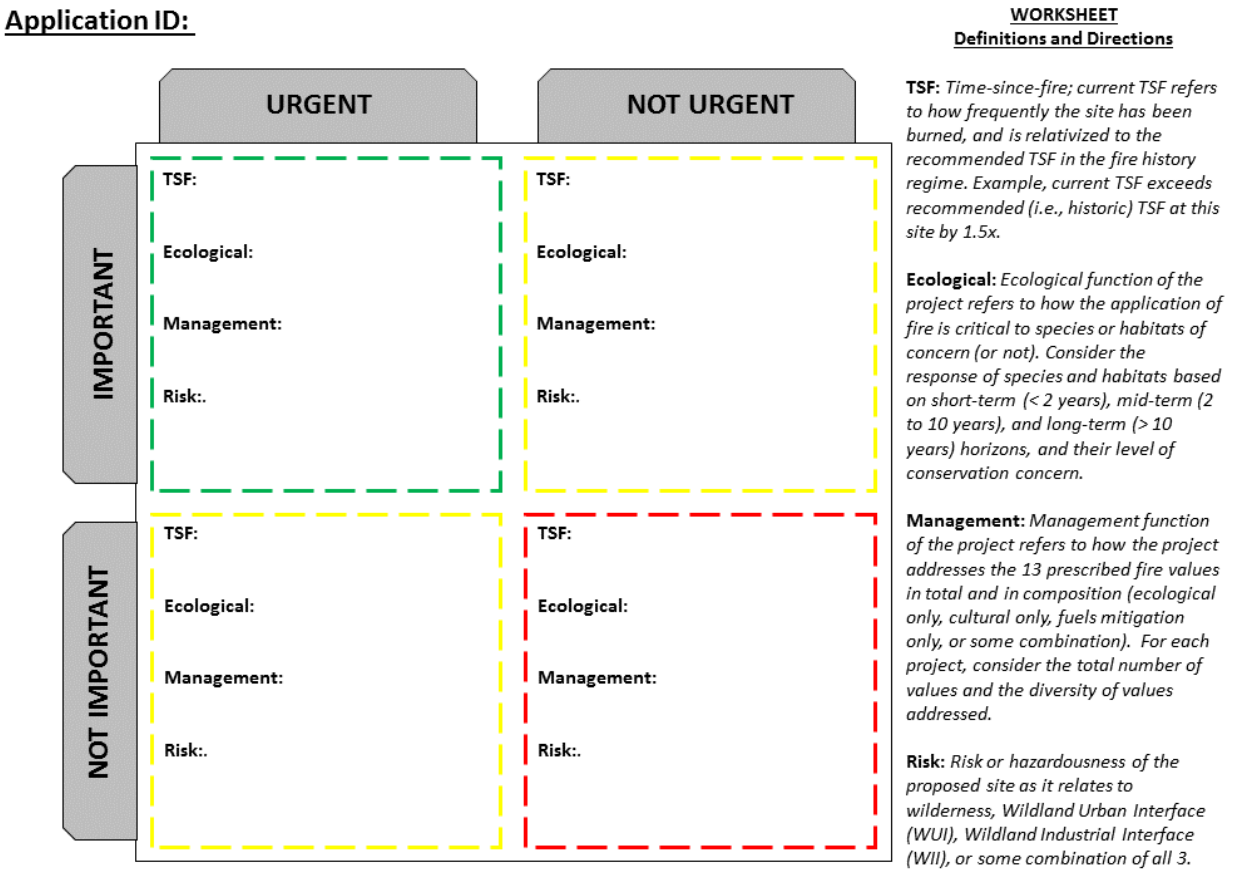
Definitions

TSF: *Time-since-fire; current TSF refers to how frequently the site has been burned, and is relativized to the recommended TSF of the fire history regime.*

Ecological: *Ecological function of the project refers to how the application of fire is critical to species or habitats of concern (or not).*

Management: *Management function of the project refers to how the project addresses the 13 prescribed fire values in total and in composition (ecological only, cultural only, fuels mitigation only, or some combination).*

Risk: *Risk or hazardousness of the proposed site as it relates to wilderness, Wildland Urban Interface (WUI), Wildland Industrial Interface (WII), or some combination of all 3.*



4. GIS Database Weighting System – First Approximation

In addition to the aforementioned processes, we developed a GIS database (p. 5) which is currently being refined in a first approximation to include a weighting system through python scripting, query development, and language which will produce a ranking of each current proposed prescribed fire in relation to others in the Region. This is an important component to the review process for prescribed fire decision making and can be used in combination with the Peace-Liard Fire Matrix as described in the following sections. This first approximation follows the process for weighting wildfire mitigation and ecosystem restoration priorities related to desired future condition in the Rocky Mountain Trench through the First Nation Forest Enhancement Society Service Delivery Model Pilot Project.

Others have also suggested planning indices, processes, discussions, and recommendations to achieve multiple objectives in pyrogenic landscapes including Lamprey 1963, Heady 1966, Rowe and Scotter 1973, Angelstam 1998, Fuhlendorf and Engle 2001, Bowman *et al*. 2004, van Wilgen *et al*. 2004, Fuhlendorf *et al.* 2006, Schmiegelow et al. 2006, Haufler *et al.* 2008, van Wilgen *et al*. 2011, White *et al*. 2011, and Williams *et al.* 2017 amongst others.

Resource Requirements
Varying levels of certification will be required depending on the location and complexity rating of each prescribed fire. Certain equipment may also need to meet certified requirements as determined with each prescription.

Resource support
Western Partnership https://www.canadawildfire.org/

Hinton training center https://extranet.gov.ab.ca/env/htc/

Canadian Interagency Forest Fire Centre http://www.ciffc.ca/

Association for Fire Ecology https://fireecology.org/

Rocky Mountain Trench Ecosystem Restoration Society http://www.trench-er.com/ and https://www.trenchsociety.com/ * http://www.trench-er.com/our_blueprint

Society for Ecosystem Restoration Northern BC http://www.sernbc.ca/

Coalition of Prescribed Fire Councils http://www.prescribedfire.net/

Great Plains Fire Science Exchange http://www.gpfirescience.org/

Southern Fire Exchange: http://www.southernfireexchange.org/PFC.html

Oklahoma State Fire Ecology http://fireecology.okstate.edu/ including videos: The Effects of Fire, Using Prescribed Fire in Oklahoma VT112

Texas A&M Fire Ecology https://sanangelo.tamu.edu/satellite-stations/sonora/

Edwards Plateau Prescribed Burning Association Inc. www.prescribedfirenetwork.com/eppba

Prescribed fire planning in BC https://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/wildfire-management/prevention/prescribed-burning

Tools for fuel management in BC https://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/wildfire-management/prevention/fire-fuel-management/fuel-management

Tools for fuel management in BC https://member.abcfp.ca/web/Files/policies/Fire_Fuel_Management-Interim_Guidelines.pdf

Tools for fuel management in BC https://www.for.gov.bc.ca/hfp/publications/00099/siteprep/3-Fire.htm

Additional map sources include: http://forests.foundryspatial.com/

Leblon, B. and M.E. Alexander. 2015. Current international perspectives on wildland fires, mankind and the environment. Nova Science Publishers

Northern Fire WoRx – trained prescribed fire crew with ignition specialists and certified wildland fire practitioners, only Type 2/3 suppression crew northeast of Prince George on contract with BCWS

Proponent and Documentation

Proponent

Historically, proponents of prescribed fire in the Region have been range tenure holders, range officers, and the fish and wildlife biologists of the BC Government. The evolved Peace-Liard Prescribed Fire Program may allow for a wider range of proponents to apply to conduct prescribed fires as long as they meet the criteria outlined in the preceding section.

Prescription

Prescribed Fire Burn Plan prescriptions are developed to address the Strategic Decision Considerations for Prescribed Fire in Region 7B as outlined in Part A. These include:

- Time of year
- Site values
- Fuel types
- Smoke management
- Boundaries and surrounding area
- Slope characteristics
- Site shape, size and visibility
- Land ownership
- Population density

Additional considerations in the prescription as identified by the Peace Range Program include the implementation of fire pre-planting or after free growing has occurred and the inclusion of spruce beetle mapping and resulting potential for prescribed fire treatments. The Peace District is able to provide the relevant datasets. Ground-truthing should occur prior to ignition.

Fire Behaviour

1. *Fuel*

   The primary fuel types across the Region are:

   - C-2 Boreal spruce – characterized by pure, moderately well-stocked black spruce stands on lowland and upland sites with tree crowns extending to or near the ground (Johnson 1992).
   - C-3 Mature lodgepole pine – characterized by pure, fully stocked pine stands that have matured to crown closure (Johnson 1992).
   - D-1 Aspen – characterized by pure, semi-mature trembling aspen stands prior to green-up in the spring or following leaf fall and dieback of lesser vegetation in autumn (Johnson 1992).
   - 0-1 Grass – characterized by matted and standing grass (Taylor *et al.* 1996).
   - There may be other fuel types including C-4 immature pine and S-1 or S-2 slash fuel type.

2. *Weather*

   The intention of the Peace-Liard Prescribed Fire Program is to implement treatments when and where appropriate. Historical timing of ignitions were typically in the spring, however, several stakeholders have reported that fall ignitions have achieved great success. Therefore, this evolved program consider the implementation of prescribed fire throughout the year as long as the fire weather indices meet the prescribed conditions.

3. *Topography*
   The Region encompasses over 11 million hectares of British Columbia, ranging from the northern extent of the Northern Rocky Mountains to the boreal plains and muskeg. Topography is variable with dominant distinguishing features in the mountains depending on aspect and valley orientation.

Values at Risk

Identification of values at risk inside and outside the Prescribed Fire Unit (PFU) are included in the Prescribed Fire Burn Plan for each PFU. In the Region, these values may include: residential areas, Indigenous communities, agriculture, forest harvesting/silviculture, oil and gas infrastructure, cultural/archaeological/heritage values, trapping and hunting areas, ecological reserves, recreation areas, transportation corridors, protected areas, old growth management areas, amongst others. While all efforts have been made to capture these values in the GIS analysis performed for this Plan, there will remain to be additional information that can be brought forward to include in future analyses and planning. In addition, it can be argued that prescribed fire conducted during appropriate indices and conditions could also assist in conserving and protecting the aforementioned values at risk. Fire as an ecological process can also be viewed as a value at risk given the decline in prescribed fire over the past decade.

Ignition

Prescribed fire ignition across the Region may include aerial or ground based operations. Aerial ignition could include the use of helicopter or fixed-wing aircraft with the Premo PSD machine, other forms of delayed aerial ignition devices (DAIDS), helitorch, Dragon products or a combination of all. Ground ignition could include drip torch, Dragon products, terra-torch, tiger torch, fusees (i.e., safety flares or road flares), or other historical ignition devices (*Note Weir 2009).

Monitoring

There are two types of monitoring associated with the Peace-Liard Prescribed Fire Program:

1. Prescribed Fire Burn Plan Monitoring of indices, fire behaviour, fire effects, and achievement of objectives.
   a. The burn boss or a designate should document a record to assist in the reporting of this monitoring.
   b. Examples are noted in: Oklahoma Prescribed Burning Handbook E-1010, Edwards Plateau Prescribed Burn Association Handbook and Journal, Field Handbook for Prescribed Fire Assessments in British Columbia – Handbook Number 11, and Alberta Prescribed Burn Fuel Sampling Handbook.
2. Ecological Monitoring of vegetation, wildlife use, success of meeting the prescribed fire values. Included in this Plan is a draft monitoring protocol which can be combined with other programs such as FREP, Range monitoring and range reference areas, and CWPP threat analyses (Note: appendix for full monitoring protocol). Lousier *et al*. (2009) also provided recommendations for monitoring including possible indicators (pp. 54) which should be considered. Also note current project of E. Hamilton (2017) regarding "Burning Questions: reducing risks & ensuring return on investments through synthesis & extension of existing information on ecosystem responses to fire."

Funding

Potential funding sources as recommended by the Rocky Mountain Trench Society:

- The Provincial Ecosystem Restoration Program (Ministry of Forests, Lands, and Natural Resources) - http://www.for.gov.bc.ca/hra/Restoration/index.htm
- The Habitat Conservation Trust Foundation - http://www.hctf.ca/
- The Forest Enhancement Society - https://news.gov.bc.ca/releases/2016FLNR0018-000284
- The Liquefied Natural Gas Environmental Stewardship Initiative - http://www2.gov.bc.ca/gov/content/environment/natural-resource-stewardship/consulting-with-first-nations/liquefied-natural-gas-environmental-stewardship-initiative
- The Moose Recovery Program - https://news.gov.bc.ca/releases/2016FLNR0026-000343
- BC Oil and Gas Innovation Society (OGRIS) - http://www.bcogris.ca/
- The Union of BC Municipalities Strategic Wildfire Prevention Initiative
- Fisheries habitat compensation projects (FHCPs) coming from the Fisheries Act HADDs (Harmful alteration, disruption or destruction of fish habitat) determined by Federal and Provincial Environmental Impact Assessments
- Ducks Unlimited - http://www.ducks.ca/province/bc/index.html
- The BC Gaming Commission - http://www.pssg.gov.bc.ca/gaming/grants/community-gaming.htm
- Beef Cattle Industry Development Fund - http://www.cattlefund.net/bcidf.htm
- The Wilburforce Foundation
- TIDES Canada - http://www.tidescanada.org
- Corporate contributions (e.g. oil and gas, forest, and mining sectors)
- The Northern Guides Association and Guide Oufitters Association of BC www.goabc.org
- The Northeast BC Wildlife Fund
- The North Peace Rod and Gun Club
- The BC Wild Sheep Society
- Other private donations
- Project management fees (fees paid by agencies that engage the Society to undertake ecosystem restoration work) and provision of consulting services (like habitat evaluation for government, research work, or community outreach)
- Also note Lousier *et al.* 2009 (pp. 57)

The Peace-Liard Fire Matrix (P-LFM)

Until 2017, the BC Government – particularly the Fish and Wildlife Section, Range Section, and BC Wildfire Service - have been responsible for the strategic planning of prescribed fire. Through the evolution of the Peace-Liard Prescribed Fire Program there has been a significant increase in collaboration and incorporation of Indigenous communities, stakeholders from multiple industries, and other Government branches. In order to proceed with implementing the distribution of time since fire across the landscape of Region 7B to meet the 13 prescribed fire values and other objectives, the Peace-Liard Fire Matrix (P-LFM) has been designed as per Leverkus 2015 and Leverkus *et al.* 2017.

The P-LFM is an application of the Landscape Disturbance Matrix (Leverkus *et al.* 2017). It is a tool for organizing past and future disturbances and ecological processes through space and time within a framework defined by topoedaphic or landscape features integrated with time since fire. While the historical range and variability of fire for each site was not readily available, the historical and current distribution of time since fire across three scales was analysed as per Leverkus 2015 (Region 7B, Natural Disturbance Unit, and per major watershed within Region 7B) and compared to area available for prescribe fire. Time-since-fire classes were established as per Leverkus *et al.* 2017 and are considered representative of the vegetation response to fire in the boreal forest where land cover classes shift through time. Burnable area represents vegetation (fuel) that is available for consumption by fire (i.e., grass, forbs, and woody plants versus rock and ice, which are currently considered non-burnable). Three matrices have been developed as part of the P-LFM: historical and current distribution of fire; potential target distribution of fire; and operational implementation.

Historical and Current Fire Matrix

Region 7B

The total area of Region 7B is 19,116,924ha. The total identified non-burnable area is 6,332,319ha. Therefore the total burnable area, the foundational area available and receptive to fire across Region 7B, is 12, 784, 606ha. The current distribution of fire across the landscape, per time since fire class, is represented in Figure 2.

Region 7B	**R7B area (ha)**	**Non-burnable area (ha)**	**Burnable area (ha)**	
	19,116,924	6,332,319	12,784,606	
Class	**Distribution**	**Fire area (ha)**	**Fire area (% burnable)**	**Fire area (% total Region)**
-1	Unknown	23,098	0.18%	0.12%
1	0 - 2 years since fire	97,046	0.76%	0.51%
2	2 - 10 years since fire	391,495	3.06%	2.05%
3	10 - 25 years since fire	252,901	1.98%	1.32%
4	25 - 50 years since fire	1,187,952	9.29%	6.21%
5	50 - 90 years since fire	2,093,050	16.37%	10.95%
6	> 90 years since fire	8,739,064	68.36%	78.84%

Figure 2 Current distribution of fire across northeast BC, Region 7B, with values in hectares and percent comparing designated burnable area to the area of the entire Region. We calculated class 6 by subtracting the total fire area (ha) from the burnable area (ha). Not presented in this figure is class 6 for the entire Region (total Region 7B area (ha) - total fire area (ha) = 15, 071, 383ha). We present both fire area percentages because it is possible that historically there has been fire across what we now term the non-burnable layer.

Region 7B Non-burnable layers	
Layer Name	**Area (ha)**
Alpine Ski Area	976
Community	474,310
Core	2,563,734
Cutblock	407,508
Forest Tenure	94,630
High Elevation Winter Range	448,956
Lake FWA	170,696
Recreation	21,399
River FWA	127,308
VRI (rock, snow, ice, bare ground)	2,325,247
Well and Facility	18,817

Figure 3 Current non-burnable area across northeast BC, Region 7B with values in hectares. This a first approximation of the non-burnable foundational layer as discussion is required as noted in later sections.

The total area burned by fire from 1922 – 2018 is approximately 4.2 million hectares and occupies approximately 33% of the total burnable area (22% of the total Region) even though some of the same areas may have burned numerous times. The area burned by prescribed fire from 1980 – 2008 in the Region is almost 270, 000ha and represents 2% of the total burnable area (1.4% of the total Region). The area burned by wildfire from 1922-2018 is approximately 3.9 million hectares and represents 30% of the burnable landscape (20% of the Region). The largest wildfire on record is more than 244, 000 ha whereas the largest recorded prescribed fire is 6, 100ha.

Fire Type	Fire area (ha)	Max fire area (ha)	Min fire area (ha)	Burnable area	% burnable	% max	% min	Total area	% total area	% max	% min
Prescribed fire	264,333	6,100	3	12,784,606	2.07	0.05	0.00	19,116,924	1.38	0.03	0.00
Wildfire	3,890,712	244,027	0	12,784,606	30.43	1.91	0.00	19,116,924	20.35	1.28	0.00
Total	4,155,046	250,127	3	12,784,606	32.50	1.96	0.00	19,116,924	21.73	1.31	0.00

Figure 4 Historical fire statistics were developed from the two fire datasets to characterize total fire areas (ha), and maximum and minimum fire areas in comparison to the developed burnable landscape and the Region as a whole.

Year	Area (ha)	Location	Comments
1950	1,400,000	Wisp/Chinchaga	The fire burned from north of the Fort St. John area into Alberta along the Chinchaga River. Total area burned was 1,400,000 hectares. The B.C. portion was 90,000 hectares. Data suggests this was a person-caused fire with up to 99, 767 ha in BC. There are two other fires in the point dataset for 1950: 76, 922ha and 76, 664ha.
1958	225,920	Kech Fire	225,920 hectares burned in the Kechika Valley, a tributary of the Liard River. Data suggests this fire was person caused and grew up to 285, 936ha. The point dataset suggest a person-caused frie also occurred in 1956 for a total area of 60, 703ha.
1970	110,419	Tee Fire	110,419 hectares burned near the Liard River/Alaska Highway area. Some data suggests this fire was in 1971 and was ignited by lightning.
1982	182,725		182,725 hectares burned near the Liard River/Alaska Highway area.
2009	23,182	Smith River	second largest fire of the season, which closed the Alaska Highway and caused the evacuation of three small communities
2012	23,830	White Spruce Creek	east of Fort Nelson; caused an evacuation order and area restrictions that affected oil and gas personnel in the area. This was the largest single wildfire of the 2012 season
2014	26,273	Mount McAllister	56 km west of Chetwynd; resulted in Evacuation Orders and Alerts.
2014	33,547	Red Deer Creek	61 km southeast of Tumbler Ridge, burned into Alberta; resulted in an Evacuation Order.
2014	64,576	Tenakihi-Mesilinka Complex	50 km west of Williston Lake, between the Mesilinka River and Tenakihi Creek.
2014	29,672	Forres Mountain	50 km northwest of Williston Lake; resulted in an Evacuation Alert.
2014	1,625	Stack Creek	37 km east of Mackenzie.
2014	180	Morfee Lake	6 km east of Mackenzie.
2014	185	Mugaha	8 km up Mugaha Creek.
2014	980	Chinchaga River	7 km northwest of Chinchaga River.
2014	4,400	Tommy Lakes	60 km northeast of Pink Mountain; resulted in an Evacuation Alert.
2014	80	Chuchi Lake	2 km north of Nation River; resulted in an Evacuation Alert.
2015	25,569	Little Bobtail Lake	southwest of Prince George; discovered May 9; resulted in Evacuation Orders and Alerts.
2015	8,200	Big Beaver Creek	at approximately Mile 250 on the Alaska Highway; discovered July 5, 2015; resulted in the brief closing of the Alaska Highway.
2016	420	Baldonnel	five kilometres east of the community of Baldonnel, near Fort St. John; discovered April 18; resulted in Evacuation Orders and Alerts.
2016	15,739	Beatton Airport Road	45 kilometres north of Fort St. John; discovered April 18; resulted in Evacuation Orders and Alerts.
2016	250	Charlie Lake	West of Charlie Lake near Fort St John; discovered April 18; resulted in Evacuation Orders and Alerts.
2016	85,300	Siphon Creek	85,300 hectares, including 62,700 hectares in B.C. and 22,600 hectares in Alberta), four kilometres east of the Doig River First Nations community, northeast of Fort St. John; discovered April 18; resulted in Evacuation Alerts.
2016	850	South Taylor Hill	South of the community of Taylor; discovered April 18; resulted in Evacuation Orders and Alerts.
2016	5,636	Halfway River	30 kilometres northeast of Hudson's Hope, along the west-side of the Halfway River; discovered April 19.

Figure 5 Historical data from the BC Wildfire Service has been summarized for the Prince George Fire Center using data located at https://www2.gov.bc.ca/gov/content/safety/wildfire-status/wildfire-statistics/wildfire-season-summary and https://www2.gov.bc.ca/gov/content/safety/wildfire-status/wildfire-statistics/major-historical-wildfires.

Orientation	Fire Type	Area (ha)
Flat	Prescribed	1,262
Flat	Wildfire	317,911
North	Prescribed	10,377
North	Wildfire	410,729
Northeast	Prescribed	17,015
Northeast	Wildfire	462,430
East	Prescribed	31,852
East	Wildfire	535,387
Southeast	Prescribed	40,006
Southeast	Wildfire	427,983
South	Prescribed	51,067
South	Wildfire	417,781
Southwest	Prescribed	58,805
Southwest	Wildfire	439,371
West	Prescribed	39,205
West	Wildfire	486,935
Northwest	Prescribed	14,744
Northwest	Wildfire	392,127

Figure 6 The interaction between aspect and fires was analysed across 9 aspect classes for wildfire and prescribed fire. South, west, and east slopes have typically been targeted with prescribed fire since 1980.

Natural Disturbance Units (NDUs)

The total area of NDUs ranges from approximately 326,000ha to 9.8 million hectares. The total identified non-burnable area ranges from approximately 56,000ha to 3.2 million hectares. The total burnable area ranges from approximately 270,000ha to 6.5 million hectares. The current distribution of fire across the NDUs, per time since fire class, is represented in Figure 7. We determined that the NDUs do not cover the entire equivalent area of Region 7B. The main discrepancy occurs in the northwestern most portion of the Region. The total area of the NDUs within the Region is 18, 777, 044ha, resulting in a discrepancy of 339, 880ha.

Boreal Foothills	NDU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	1,183,662	489,918	693,744	
Class	**Distribution**	**Fire area (ha)**	**Fire area (% burnable)**	**Fire area (% total NDU)**
-1	Unknown	89	0.01%	0.01%
1	0 - 2 years since fire	102	0.01%	0.01%
2	2 - 10 years since fire	35,696	5.15%	3.02%
3	10 - 25 years since fire	14,117	2.03%	1.19%
4	25 - 50 years since fire	42,544	6.13%	3.59%
5	50 - 90 years since fire	73,195	10.55%	6.18%
6	> 90 years since fire	528,001	76.11%	86.00%
Boreal Plains	NDU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	9,758,440	3,213,044	6,545,396	
Class	**Distribution**	**Fire area (ha)**	**Fire area (% burnable)**	**Fire area (% total NDU)**
-1	Unknown	3,266	0.05%	0.03%
1	0 - 2 years since fire	95,819	1.46%	0.98%
2	2 - 10 years since fire	173,872	2.66%	1.78%
3	10 - 25 years since fire	102,290	1.56%	1.05%
4	25 - 50 years since fire	396,701	6.06%	4.07%
5	50 - 90 years since fire	1,396,794	21.34%	14.31%
6	> 90 years since fire	4,376,655	66.87%	77.78%
Northern Boreal Mountains	NDU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	6,882,890	2,230,227	4,652,663	
Class	**Distribution**	**Fire area (ha)**	**Fire area (% burnable)**	**Fire area (% total NDU)**
-1	Unknown	19,684	0.42%	0.29%
1	0 - 2 years since fire	424	0.01%	0.01%
2	2 - 10 years since fire	160,199	3.44%	2.33%
3	10 - 25 years since fire	126,118	2.71%	1.83%
4	25 - 50 years since fire	739,701	15.90%	10.75%
5	50 - 90 years since fire	593,705	12.76%	8.63%
6	> 90 years since fire	3,012,832	64.75%	76.18%
Omineca	NDU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	325,919	55,967	269,952	
Class	**Distribution**	**Fire area (ha)**	**Fire area (% burnable)**	**Fire area (% total NDU)**
-1	Unknown	59	0.02%	0.02%
1	0 - 2 years since fire	83	0.03%	0.03%
2	2 - 10 years since fire	8,936	3.31%	2.74%
3	10 - 25 years since fire	1,746	0.65%	0.54%
4	25 - 50 years since fire	4,378	1.62%	1.34%
5	50 - 90 years since fire	11,111	4.12%	3.41%
6	> 90 years since fire	243,639	90.25%	91.93%
Wet Mountain	NDU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	574,335	164,732	409,603	
Class	**Distribution**	**Fire area (ha)**	**Fire area (% burnable)**	**Fire area (% total NDU)**
-1	Unknown	0	0.00%	0.00%
1	0 - 2 years since fire	300	0.07%	0.05%
2	2 - 10 years since fire	2,352	0.57%	0.41%
3	10 - 25 years since fire	2,318	0.57%	0.40%
4	25 - 50 years since fire	2,890	0.71%	0.50%
5	50 - 90 years since fire	17,670	4.31%	3.08%
6	> 90 years since fire	384,073	93.77%	95.55%

Figure 7 Current distribution of fire across Natural Disturbance Units (NDUs) in Region 7B with values in hectares and percent. Not presented in this figure is class 6 for the total area of each NDU (total NDU area (ha) - total fire area (ha)). We include a comparison between burnable area and total NDU because it is possible that areas outside of the designated burnable area within each NDU may have burned in the past and may also be receptive to fire in the future. Fire is absent in the Wet Trench NDU therefore it is not included in this figure.

NDU	Area (ha)	Non-burnable area (ha)	Burnable area (ha)
Boreal Foothills	1,183,662	489,918	693,744
Boreal Plains	9,758,440	3,213,044	6,545,396
Northern Boreal Mountains	6,882,890	2,230,227	4,652,663
Omineca	325,919	55,967	269,952
Wet Mountain	574,335	164,732	409,603
Wet Trench	51,799	2,789	49,009
Total Area	*18,777,044*	*6,156,676*	12,620,368

Figure 8 Current non-burnable area across NDUs in northeast BC, Region 7B with values in hectares. The Wet Trench NDU is included even though there is no recorded fire within this NDU.

NDU	Non-Burnable Layer Name	Non-Burnable Area (ha)
Boreal Foothills	Alpine Ski Area	104
Boreal Foothills	Community (2km buffer)	201,317
Boreal Foothills	Cutblock	94,343
Boreal Foothills	Forest Tenure	7,734
Boreal Foothills	High Elevation Winter Range	261,723
Boreal Foothills	Lake FWA	19,236
Boreal Foothills	Recreation	4,571
Boreal Foothills	River FWA	4,947
Boreal Foothills	VRI (rock, snow, ice, bare)	16,455
Boreal Foothills	Well and Facility	105
Boreal Plains	Community (2km buffer)	262,529
Boreal Plains	Core	2,563,387
Boreal Plains	Cutblock	252,080
Boreal Plains	Forest Tenure	86,296
Boreal Plains	High Elevation Winter Range	22,379
Boreal Plains	Lake FWA	92,592
Boreal Plains	Recreation	13,891
Boreal Plains	River FWA	53,943
Boreal Plains	VRI (rock, snow, ice, bare)	20,108
Boreal Plains	Well and Facility	18,649
Northern Boreal Mountains	Community (2km buffer)	8,935
Northern Boreal Mountains	Cutblock	37,409
Northern Boreal Mountains	Lake FWA	35,061
Northern Boreal Mountains	Recreation	349
Northern Boreal Mountains	River FWA	65,624
Northern Boreal Mountains	VRI (rock, snow, ice, bare)	2,089,253
Northern Boreal Mountains	Well and Facility	63
Omineca	Cutblock	12,820
Omineca	High Elevation Winter Range	31,707
Omineca	Lake FWA	10,589
Omineca	Recreation	439
Omineca	River FWA	652
Omineca	VRI (rock, snow, ice, bare)	10,473
Wet Mountain	Alpine Ski Area	873
Wet Mountain	Community (2km buffer)	1,528
Wet Mountain	Cutblock	10,856
Wet Mountain	Forest Tenure	600
Wet Mountain	High Elevation Winter Range	133,147
Wet Mountain	Lake FWA	7,402
Wet Mountain	Recreation	2,147
Wet Mountain	River FWA	1,361
Wet Mountain	VRI (rock, snow, ice, bare)	17,215
Wet Trench	Lake FWA	1,352
Wet Trench	River FWA	54
Wet Trench	VRI (rock, snow, ice, bare)	1,383

Figure 9 Identified non-burnable areas per NDU with area represented in hectares.

The total area burned by prescribed fire from 1980 – 2008 in each NDU of the Region ranges from 0 ha to 222, 000ha (5% of the burnable area within the Northern Boreal Mountains NDU or 3% of the total NDU). Total area burned by wildfire from 1922 – 2018 in the same NDUs ranges from approximately 0 ha to almost 2.2 million hectares (33% of the burnable area of the Boreal Plains NDU or 22% of the total NDU).

NDU	Fire Type	Fire area (ha)	Max fire area (ha)	Min fire area (ha)	Burnable area	% burnable	% max	% min	Total area	% total area	% max	% min
Boreal Foothills	Prescribed Fire	9,501	1,923	0.00	693,744	1.37	0.28	0.00	1,183,662	0.80	0.16	0.00
Boreal Foothills	Wildfire	163,059	22,135	0.00	693,744	23.50	3.19	0.00	1,183,662	13.78	1.87	0.00
Boreal Plains	Prescribed Fire	29,388	2,043	0.02	6,545,396	0.45	0.03	0.00	9,758,440	0.30	0.02	0.00
Boreal Plains	Wildfire	2,150,776	104,485	0.00	6,545,396	32.86	1.60	0.00	9,758,440	22.04	1.07	0.00
Northern Boreal Mountains	Prescribed Fire	222,120	5,484	0.00	4,652,663	4.77	0.12	0.00	6,882,890	3.23	0.08	0.00
Northern Boreal Mountains	Wildfire	1,503,227	189,192	0.00	4,652,663	32.31	4.07	0.00	6,882,890	21.84	2.75	0.00
Omineca	Prescribed Fire	3,323	409	0.03	269,952	1.23	0.15	0.00	325,919	1.02	0.13	0.00
Omineca	Wildfire	28,625	7,979	0.03	269,952	10.60	2.96	0.00	325,919	8.78	2.45	0.00
Wet Mountain	Prescribed Fire	0	0	0.00	409,603	0.00	0.00	0.00	574,335	0.00	0.00	0.00
Wet Mountain	Wildfire	25,598	5,414	0.00	409,603	6.25	1.32	0.00	574,335	4.46	0.94	0.00
Wet Trench	Prescribed Fire	0	0	0.00	49,009	0.00	0.00	0.00	51,799	0.00	0.00	0.00
Wet Trench	Wildfire	0	0	0.00	49,009	0.00	0.00	0.00	51,799	0.00	0.00	0.00

Figure 10 Historical fire statistics were developed from the two fire datasets to characterize total fire areas (ha), and maximum and minimum fire areas in comparison to the developed burnable landscape and the whole area of the NDUs.

Landscape Units (LUs)

The total area of LUs ranges from approximately 326,000ha to 9.8 million hectares. The total identified non-burnable area ranges from approximately 56,000ha to 3.2 million hectares. The total burnable area ranges from approximately 270,000ha to 6.5 million hectares. The current distribution of fire across the NDUs, per time since fire class, is represented in Figure 10. We determined that the LUs do not cover the entire equivalent area of Region 7B. The main discrepancy occurs in the northwestern most portion of the Region (Chukachida River) with other discrepancies in areas where we compare time since fire to the burnable landscape. There are several LUs which have received significant fire across the whole LU (Hudson's Hope, Lake, Liard River, and Milligan). The total area of the LUs within the Region is 19, 109, 067ha, resulting in a 7, 857ha discrepancy.

Bearhole	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	115,298	26,637	88,660	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	0	0.00%	0.00%
1	0 - 2 years since fire	0	0.00%	0.00%
2	2 - 10 years since fire	1	0.00%	0.00%
3	10 - 25 years since fire	0.15	0.00%	0.00%
4	25 - 50 years since fire	431	0.49%	0.37%
5	50 - 90 years since fire	0	0.00%	0.00%
6	> 90 years since fire	88,228	99.51%	99.63%
Beaver	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	184,342	2,586	181,756	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	0	0.00%	0.00%
1	0 - 2 years since fire	0	0.00%	0.00%
2	2 - 10 years since fire	1,880	1.03%	1.02%
3	10 - 25 years since fire	8,223	4.52%	4.46%
4	25 - 50 years since fire	12,352	6.80%	6.70%
5	50 - 90 years since fire	12,275	6.75%	6.66%
6	> 90 years since fire	147,027	80.89%	81.16%
Belcourt	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	110,990	35,762	75,228	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	0	0.00%	0.00%
1	0 - 2 years since fire	0	0.00%	0.00%
2	2 - 10 years since fire	6,975	9.27%	6.28%
3	10 - 25 years since fire	9,153	12.17%	8.25%
4	25 - 50 years since fire	1,043	1.39%	0.94%
5	50 - 90 years since fire	0	0.00%	0.00%
6	> 90 years since fire	58,057	77.17%	84.53%
Blueberry	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	731,433	89,030	642,403	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	76	0.01%	0.01%
1	0 - 2 years since fire	7,839	1.22%	1.07%
2	2 - 10 years since fire	424	0.07%	0.06%
3	10 - 25 years since fire	6,479	1.01%	0.89%
4	25 - 50 years since fire	55,431	8.63%	7.58%
5	50 - 90 years since fire	395,419	61.55%	54.06%
6	> 90 years since fire	176,736	27.51%	36.33%
Boreal	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	218,506	97,223	121,283	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	0	0.00%	0.00%
1	0 - 2 years since fire	0	0.00%	0.00%
2	2 - 10 years since fire	9,139	7.54%	4.18%
3	10 - 25 years since fire	2,247	1.85%	1.03%
4	25 - 50 years since fire	17,660	14.56%	8.08%
5	50 - 90 years since fire	59,903	49.39%	27.42%
6	> 90 years since fire	32,333	26.66%	59.29%

Boucher	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	39,332	15,621	23,711	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	0	0.00%	0.00%
1	0 - 2 years since fire	69	0.29%	0.18%
2	2 - 10 years since fire	394	1.66%	1.00%
3	10 - 25 years since fire	166	0.70%	0.42%
4	25 - 50 years since fire	1,019	4.30%	2.59%
5	50 - 90 years since fire	6,774	28.57%	17.22%
6	> 90 years since fire	15,289	64.48%	78.59%
Braid	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	131,898	70,077	61,820	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	0	0.00%	0.00%
1	0 - 2 years since fire	0	0.00%	0.00%
2	2 - 10 years since fire	0	0.00%	0.00%
3	10 - 25 years since fire	0	0.00%	0.00%
4	25 - 50 years since fire	6,926	11.20%	5.25%
5	50 - 90 years since fire	0	0.00%	0.00%
6	> 90 years since fire	54,895	88.80%	94.75%
Burnt – Lemoray	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	129,189	37,942	91,247	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	0	0.00%	0.00%
1	0 - 2 years since fire	59	0.06%	0.05%
2	2 - 10 years since fire	467	0.51%	0.36%
3	10 - 25 years since fire	90	0.10%	0.07%
4	25 - 50 years since fire	155	0.17%	0.12%
5	50 - 90 years since fire	10,692	11.72%	8.28%
6	> 90 years since fire	79,784	87.44%	91.13%
Carbon	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	95,617	34,727	60,890	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	0	0.00%	0.00%
1	0 - 2 years since fire	0	0.00%	0.00%
2	2 - 10 years since fire	5,384	8.84%	5.63%
3	10 - 25 years since fire	0	0.00%	0.00%
4	25 - 50 years since fire	75	0.12%	0.08%
5	50 - 90 years since fire	317	0.52%	0.33%
6	> 90 years since fire	55,113	90.51%	93.96%
Chukachida River	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	307	282	25	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	0	0.00%	0.00%
1	0 - 2 years since fire	0	0.00%	0.00%
2	2 - 10 years since fire	0	0.00%	0.00%
3	10 - 25 years since fire	0	0.00%	0.00%
4	25 - 50 years since fire	27	105.62%	8.73%
5	50 - 90 years since fire	-	0.00%	0.00%
6	> 90 years since fire	-	0.00%	91.27%

Churchill	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	453,911	359,198	94,713	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	5,948	6.28%	1.31%
1	0 - 2 years since fire	30	0.03%	0.01%
2	2 - 10 years since fire	3,687	3.89%	0.81%
3	10 - 25 years since fire	4,258	4.50%	0.94%
4	25 - 50 years since fire	27,682	29.23%	6.10%
5	50 - 90 years since fire	16,054	16.95%	3.54%
6	> 90 years since fire	37,054	39.12%	87.30%
Clarke	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	411,588	254,883	156,705	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	0	0.00%	0.00%
1	0 - 2 years since fire	19	0.01%	0.00%
2	2 - 10 years since fire	1,257	0.80%	0.31%
3	10 - 25 years since fire	96	0.06%	0.02%
4	25 - 50 years since fire	18,442	11.77%	4.48%
5	50 - 90 years since fire	98,949	63.14%	24.04%
6	> 90 years since fire	37,943	24.21%	71.15%
Clearwater	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	109,210	50,984	58,226	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	0	0.00%	0.00%
1	0 - 2 years since fire	8	0.01%	0.01%
2	2 - 10 years since fire	188	0.32%	0.17%
3	10 - 25 years since fire	0	0.00%	0.00%
4	25 - 50 years since fire	49	0.08%	0.04%
5	50 - 90 years since fire	4,180	7.18%	3.83%
6	> 90 years since fire	53,801	92.40%	95.95%
Cridland	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	263,311	100,156	163,155	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	0	0.00%	0.00%
1	0 - 2 years since fire	0	0.00%	0.00%
2	2 - 10 years since fire	12	0.01%	0.00%
3	10 - 25 years since fire	238	0.15%	0.09%
4	25 - 50 years since fire	5,885	3.61%	2.24%
5	50 - 90 years since fire	66,568	40.80%	25.28%
6	> 90 years since fire	90,451	55.44%	72.39%
Crying Girl	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	67,344	44,557	22,787	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	93	0.41%	0.14%
1	0 - 2 years since fire	0	0.00%	0.00%
2	2 - 10 years since fire	1,137	4.99%	1.69%
3	10 - 25 years since fire	1,955	8.58%	2.90%
4	25 - 50 years since fire	2,397	10.52%	3.56%
5	50 - 90 years since fire	0	0.00%	0.00%
6	> 90 years since fire	17,206	75.51%	91.71%

Dawson Creek	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	157,194	22,229	134,965	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	0	0.00%	0.00%
1	0 - 2 years since fire	64	0.05%	0.04%
2	2 - 10 years since fire	281	0.21%	0.18%
3	10 - 25 years since fire	169	0.12%	0.11%
4	25 - 50 years since fire	439	0.33%	0.28%
5	50 - 90 years since fire	9,332	6.91%	5.94%
6	> 90 years since fire	124,681	92.38%	93.46%
Dease-Liard	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	327,723	165,830	161,892	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	0	0.00%	0.00%
1	0 - 2 years since fire	0	0.00%	0.00%
2	2 - 10 years since fire	10,001	6.18%	3.05%
3	10 - 25 years since fire	6,192	3.82%	1.89%
4	25 - 50 years since fire	1,278	0.79%	0.39%
5	50 - 90 years since fire	546	0.34%	0.17%
6	> 90 years since fire	143,875	88.87%	94.50%
Dunlevy	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	49,910	16,149	33,761	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	0	0.00%	0.00%
1	0 - 2 years since fire	0	0.00%	0.00%
2	2 - 10 years since fire	12	0.04%	0.02%
3	10 - 25 years since fire	1,298	3.85%	2.60%
4	25 - 50 years since fire	2,948	8.73%	5.91%
5	50 - 90 years since fire	15,771	46.71%	31.60%
6	> 90 years since fire	13,732	40.67%	59.87%
East Pine	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	22,682	4,666	18,016	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	0	0.00%	0.00%
1	0 - 2 years since fire	127	0.70%	0.56%
2	2 - 10 years since fire	7	0.04%	0.03%
3	10 - 25 years since fire	54	0.30%	0.24%
4	25 - 50 years since fire	6,982	38.75%	30.78%
5	50 - 90 years since fire	5,080	28.20%	22.40%
6	> 90 years since fire	5,766	32.01%	45.99%
Frog	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	261,904	178,725	83,179	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	0	0.00%	0.00%
1	0 - 2 years since fire	0	0.00%	0.00%
2	2 - 10 years since fire	7,642	9.19%	2.92%
3	10 - 25 years since fire	0	0.00%	0.00%
4	25 - 50 years since fire	2,408	2.89%	0.92%
5	50 - 90 years since fire	0	0.00%	0.00%
6	> 90 years since fire	73,129	87.92%	96.16%

Frog-Gataga	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	345,615	149,758	195,857	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	1,651	0.84%	0.48%
1	0 - 2 years since fire	0	0.00%	0.00%
2	2 - 10 years since fire	5,471	2.79%	1.58%
3	10 - 25 years since fire	9,776	4.99%	2.83%
4	25 - 50 years since fire	14,811	7.56%	4.29%
5	50 - 90 years since fire	4,704	2.40%	1.36%
6	> 90 years since fire	159,444	81.41%	89.46%
Gathto	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	392,743	168,312	224,431	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	3,340	1.49%	0.85%
1	0 - 2 years since fire	0	0.00%	0.00%
2	2 - 10 years since fire	4,625	2.06%	1.18%
3	10 - 25 years since fire	98	0.04%	0.02%
4	25 - 50 years since fire	48,077	21.42%	12.24%
5	50 - 90 years since fire	5,972	2.66%	1.52%
6	> 90 years since fire	162,320	72.33%	84.19%
Gething	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	62,030	14,416	47,614	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	0	0.00%	0.00%
1	0 - 2 years since fire	**0**	0.00%	0.00%
2	2 - 10 years since fire	14,540	30.54%	23.44%
3	10 - 25 years since fire	45	0.09%	0.07%
4	25 - 50 years since fire	5,340	11.22%	8.61%
5	50 - 90 years since fire	52	0.11%	0.08%
6	> 90 years since fire	27,637	58.04%	67.79%
Graham	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	334,189	72,133	262,056	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	256	0.10%	0.08%
1	0 - 2 years since fire	0	0.00%	0.00%
2	2 - 10 years since fire	0	0.00%	0.00%
3	10 - 25 years since fire	4,837	1.85%	1.45%
4	25 - 50 years since fire	17,770	6.78%	5.32%
5	50 - 90 years since fire	2,033	0.78%	0.61%
6	> 90 years since fire	237,161	90.50%	92.55%
Gwillim	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	138,070	66,819	71,251	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	85	0.12%	0.06%
1	0 - 2 years since fire	6	0.01%	0.00%
2	2 - 10 years since fire	8	0.01%	0.01%
3	10 - 25 years since fire	36	0.05%	0.03%
4	25 - 50 years since fire	513	0.72%	0.37%
5	50 - 90 years since fire	8,935	12.54%	6.47%
6	> 90 years since fire	61,667	86.55%	93.06%

Halfway	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	206,437	34,162	172,275	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	0	0.00%	0.00%
1	0 - 2 years since fire	0	0.00%	0.00%
2	2 - 10 years since fire	238	0.14%	0.12%
3	10 - 25 years since fire	284	0.16%	0.14%
4	25 - 50 years since fire	9,467	5.50%	4.59%
5	50 - 90 years since fire	8,849	5.14%	4.29%
6	> 90 years since fire	153,437	89.07%	90.87%
Highhat	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	93,009	20,072	72,937	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	0	0.00%	0.00%
1	0 - 2 years since fire	0	0.00%	0.00%
2	2 - 10 years since fire	18	0.03%	0.02%
3	10 - 25 years since fire	31	0.04%	0.03%
4	25 - 50 years since fire	436	0.60%	0.47%
5	50 - 90 years since fire	5,933	8.13%	6.38%
6	> 90 years since fire	66,519	91.20%	93.10%
Holden	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	241,358	2,822	238,537	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	1,266	0.53%	0.52%
1	0 - 2 years since fire	0	0.00%	0.00%
2	2 - 10 years since fire	1,391	0.58%	0.58%
3	10 - 25 years since fire	4,067	1.71%	1.69%
4	25 - 50 years since fire	32,271	13.53%	13.37%
5	50 - 90 years since fire	102,157	42.83%	42.33%
6	> 90 years since fire	97,385	40.83%	41.52%
Hudson's Hope	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	92,768	90,838	1,930	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	781	40.46%	0.84%
2	2 - 10 years since fire	2,003	103.77%	2.16%
3	10 - 25 years since fire	214	11.08%	0.23%
4	25 - 50 years since fire	6,756	349.97%	7.28%
5	50 - 90 years since fire	30,158	1562.21%	32.51%
6	> 90 years since fire	-37,982	-1967.49%	56.98%
Hyland	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	494,959	49,903	445,056	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	2,654	0.60%	0.54%
1	0 - 2 years since fire	-	0.00%	0.00%
2	2 - 10 years since fire	1,864	0.42%	0.38%
3	10 - 25 years since fire	1,622	0.36%	0.33%
4	25 - 50 years since fire	127,283	28.60%	25.72%
5	50 - 90 years since fire	4,961	1.11%	1.00%
6	> 90 years since fire	306,671	68.91%	72.04%

Imperial - Monkman	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	121,905	12,813	109,092	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	231	0.21%	0.19%
2	2 - 10 years since fire	-	0.00%	0.00%
3	10 - 25 years since fire	1	0.00%	0.00%
4	25 - 50 years since fire	1,416	1.30%	1.16%
5	50 - 90 years since fire	3,300	3.02%	2.71%
6	> 90 years since fire	104,145	95.46%	95.94%
Irene	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	235,983	9,591	226,392	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	8	0.00%	0.00%
2	2 - 10 years since fire	2,270	1.00%	0.96%
3	10 - 25 years since fire	-	0.00%	0.00%
4	25 - 50 years since fire	612	0.27%	0.26%
5	50 - 90 years since fire	319	0.14%	0.14%
6	> 90 years since fire	223,183	98.58%	98.64%
Kahntah	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	749,247	343,280	405,967	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	31	0.01%	0.00%
2	2 - 10 years since fire	21,236	5.23%	2.83%
3	10 - 25 years since fire	1,247	0.31%	0.17%
4	25 - 50 years since fire	21,906	5.40%	2.92%
5	50 - 90 years since fire	17,494	4.31%	2.33%
6	> 90 years since fire	344,053	84.75%	91.74%
Kechika	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	333,426	12,471	320,954	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	229	0.07%	0.07%
1	0 - 2 years since fire	199	0.06%	0.06%
2	2 - 10 years since fire	58,410	18.20%	17.52%
3	10 - 25 years since fire	7,240	2.26%	2.17%
4	25 - 50 years since fire	80,569	25.10%	24.16%
5	50 - 90 years since fire	74,235	23.13%	22.26%
6	> 90 years since fire	100,072	31.18%	33.75%
Kinuseo	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	135,693	44,756	90,936	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	-	0.00%	0.00%
2	2 - 10 years since fire	878	0.97%	0.65%
3	10 - 25 years since fire	2,789	3.07%	2.06%
4	25 - 50 years since fire	8,213	9.03%	6.05%
5	50 - 90 years since fire	80	0.09%	0.06%
6	> 90 years since fire	78,977	86.85%	91.19%

Kiskatinaw	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	239,972	13,417	226,555	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	1,463	0.65%	0.61%
2	2 - 10 years since fire	404	0.18%	0.17%
3	10 - 25 years since fire	811	0.36%	0.34%
4	25 - 50 years since fire	14,694	6.49%	6.12%
5	50 - 90 years since fire	103,981	45.90%	43.33%
6	> 90 years since fire	105,202	46.44%	49.43%
Kiwigana	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	443,334	223,064	220,270	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	47	0.02%	0.01%
2	2 - 10 years since fire	1,093	0.50%	0.25%
3	10 - 25 years since fire	3,056	1.39%	0.69%
4	25 - 50 years since fire	266	0.12%	0.06%
5	50 - 90 years since fire	4,523	2.05%	1.02%
6	> 90 years since fire	211,284	95.92%	97.97%
Kledo	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	253,385	5,387	247,997	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	-	0.00%	0.00%
2	2 - 10 years since fire	17,047	6.87%	6.73%
3	10 - 25 years since fire	-	0.00%	0.00%
4	25 - 50 years since fire	25,530	10.29%	10.08%
5	50 - 90 years since fire	14,485	5.84%	5.72%
6	> 90 years since fire	190,935	76.99%	77.48%
Klowee	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	194,691	46,159	148,532	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	2	0.00%	0.00%
2	2 - 10 years since fire	4,016	2.70%	2.06%
3	10 - 25 years since fire	103	0.07%	0.05%
4	25 - 50 years since fire	36,116	24.32%	18.55%
5	50 - 90 years since fire	25,992	17.50%	13.35%
6	> 90 years since fire	82,303	55.41%	65.98%
Klua	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	460,601	139,355	321,246	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	7	0.00%	0.00%
2	2 - 10 years since fire	18,412	5.73%	4.00%
3	10 - 25 years since fire	312	0.10%	0.07%
4	25 - 50 years since fire	6,950	2.16%	1.51%
5	50 - 90 years since fire	27,411	8.53%	5.95%
6	> 90 years since fire	268,152	83.47%	88.47%

Kobes	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	159,858	33,370	126,487	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	5,581	4.41%	3.49%
2	2 - 10 years since fire	285	0.23%	0.18%
3	10 - 25 years since fire	477	0.38%	0.30%
4	25 - 50 years since fire	4,511	3.57%	2.82%
5	50 - 90 years since fire	1,591	1.26%	0.99%
6	> 90 years since fire	114,043	90.16%	92.22%
Kotcho	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	901,040	295,255	605,785	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	269	0.04%	0.03%
2	2 - 10 years since fire	25,976	4.29%	2.88%
3	10 - 25 years since fire	22,267	3.68%	2.47%
4	25 - 50 years since fire	44,946	7.42%	4.99%
5	50 - 90 years since fire	28,501	4.70%	3.16%
6	> 90 years since fire	483,825	79.87%	86.46%
Lake	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	30,168	29,973	195	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	269	138.14%	0.89%
2	2 - 10 years since fire	5	2.56%	0.02%
3	10 - 25 years since fire	150	76.95%	0.50%
4	25 - 50 years since fire	856	439.23%	2.84%
5	50 - 90 years since fire	1,823	935.15%	6.04%
6	> 90 years since fire	- 2,909	-1492.03%	89.71%
Liard River	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	90,611	11,809	78,802	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	-	0.00%	0.00%
2	2 - 10 years since fire	7,246	9.20%	8.00%
3	10 - 25 years since fire	2,537	3.22%	2.80%
4	25 - 50 years since fire	49,949	63.39%	55.13%
5	50 - 90 years since fire	22,558	28.63%	24.90%
6	> 90 years since fire	- 3,489	-4.43%	9.18%
Liard River Corridor Park	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	90,111	6,418	83,693	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	5	0.01%	0.01%
1	0 - 2 years since fire	-	0.00%	0.00%
2	2 - 10 years since fire	350	0.42%	0.39%
3	10 - 25 years since fire	3,549	4.24%	3.94%
4	25 - 50 years since fire	51,980	62.11%	57.68%
5	50 - 90 years since fire	8,146	9.73%	9.04%
6	> 90 years since fire	19,662	23.49%	28.94%

Lower Beatton	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	498,457	49,981	448,476	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	1,429	0.32%	0.29%
1	0 - 2 years since fire	35,971	8.02%	7.22%
2	2 - 10 years since fire	1,660	0.37%	0.33%
3	10 - 25 years since fire	1,286	0.29%	0.26%
4	25 - 50 years since fire	23,613	5.27%	4.74%
5	50 - 90 years since fire	200,186	44.64%	40.16%
6	> 90 years since fire	184,331	41.10%	47.01%
Lower Moberly	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	98,304	20,020	78,283	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	62	0.08%	0.06%
2	2 - 10 years since fire	192	0.25%	0.20%
3	10 - 25 years since fire	86	0.11%	0.09%
4	25 - 50 years since fire	10,508	13.42%	10.69%
5	50 - 90 years since fire	22,099	28.23%	22.48%
6	> 90 years since fire	45,337	57.91%	66.48%
Major Hart	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	267,228	115,765	151,463	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	-	0.00%	0.00%
2	2 - 10 years since fire	2,742	1.81%	1.03%
3	10 - 25 years since fire	8,542	5.64%	3.20%
4	25 - 50 years since fire	4,794	3.17%	1.79%
5	50 - 90 years since fire	18,845	12.44%	7.05%
6	> 90 years since fire	116,540	76.94%	86.93%
Martin Creek	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	64,575	9,628	54,947	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	84	0.15%	0.13%
1	0 - 2 years since fire	8	0.02%	0.01%
2	2 - 10 years since fire	3	0.01%	0.01%
3	10 - 25 years since fire	465	0.85%	0.72%
4	25 - 50 years since fire	501	0.91%	0.78%
5	50 - 90 years since fire	3,316	6.04%	5.14%
6	> 90 years since fire	50,569	92.03%	93.22%
Milligan	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	473,968	410,869	63,098	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	1,157	1.83%	0.24%
1	0 - 2 years since fire	36,334	57.58%	7.67%
2	2 - 10 years since fire	9,977	15.81%	2.11%
3	10 - 25 years since fire	899	1.43%	0.19%
4	25 - 50 years since fire	14,282	22.63%	3.01%
5	50 - 90 years since fire	102,441	162.35%	21.61%
6	> 90 years since fire	- 101,993	-161.64%	65.17%

Muncho	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	239,702	133,667	106,035	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	-	0.00%	0.00%
2	2 - 10 years since fire	-	0.00%	0.00%
3	10 - 25 years since fire	43	0.04%	0.02%
4	25 - 50 years since fire	123	0.12%	0.05%
5	50 - 90 years since fire	41,915	39.53%	17.49%
6	> 90 years since fire	63,954	60.31%	82.44%
Nabesche	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	91,342	11,118	80,224	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	-	0.00%	0.00%
2	2 - 10 years since fire	7,979	9.95%	8.74%
3	10 - 25 years since fire	-	0.00%	0.00%
4	25 - 50 years since fire	245	0.31%	0.27%
5	50 - 90 years since fire	-	0.00%	0.00%
6	> 90 years since fire	71,999	89.75%	91.00%
Narraway	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	78,742	6,908	71,834	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	-	0.00%	0.00%
2	2 - 10 years since fire	-	0.00%	0.00%
3	10 - 25 years since fire	-	0.00%	0.00%
4	25 - 50 years since fire	175	0.24%	0.22%
5	50 - 90 years since fire	-	0.00%	0.00%
6	> 90 years since fire	71,659	99.76%	99.78%
Nelson Forks	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	117,209	22,106	95,103	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	-	0.00%	0.00%
2	2 - 10 years since fire	238	0.25%	0.20%
3	10 - 25 years since fire	290	0.31%	0.25%
4	25 - 50 years since fire	2,542	2.67%	2.17%
5	50 - 90 years since fire	1,533	1.61%	1.31%
6	> 90 years since fire	90,500	95.16%	96.07%
Netson	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	323,324	134,311	189,013	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	6	0.00%	0.00%
1	0 - 2 years since fire	-	0.00%	0.00%
2	2 - 10 years since fire	-	0.00%	0.00%
3	10 - 25 years since fire	3,108	1.64%	0.96%
4	25 - 50 years since fire	1,192	0.63%	0.37%
5	50 - 90 years since fire	25,130	13.30%	7.77%
6	> 90 years since fire	159,577	84.43%	90.90%

One Island	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	191,030	32,746	158,284	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	37	0.02%	0.02%
2	2 - 10 years since fire	26	0.02%	0.01%
3	10 - 25 years since fire	5,368	3.39%	2.81%
4	25 - 50 years since fire	9,493	6.00%	4.97%
5	50 - 90 years since fire	501	0.32%	0.26%
6	> 90 years since fire	142,860	90.26%	91.93%
Petitot	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	794,819	545,642	249,177	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	5,607	2.25%	0.71%
2	2 - 10 years since fire	40,748	16.35%	5.13%
3	10 - 25 years since fire	32,599	13.08%	4.10%
4	25 - 50 years since fire	7,452	2.99%	0.94%
5	50 - 90 years since fire	21,187	8.50%	2.67%
6	> 90 years since fire	141,584	56.82%	86.46%
Pine Pass	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	126,678	35,424	91,254	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	-	0.00%	0.00%
2	2 - 10 years since fire	166	0.18%	0.13%
3	10 - 25 years since fire	54	0.06%	0.04%
4	25 - 50 years since fire	659	0.72%	0.52%
5	50 - 90 years since fire	8,577	9.40%	6.77%
6	> 90 years since fire	81,798	89.64%	92.54%
Pine River	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	93,082	20,811	72,272	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	973	1.35%	1.05%
2	2 - 10 years since fire	203	0.28%	0.22%
3	10 - 25 years since fire	448	0.62%	0.48%
4	25 - 50 years since fire	17,613	24.37%	18.92%
5	50 - 90 years since fire	23,530	32.56%	25.28%
6	> 90 years since fire	29,505	40.82%	54.05%
Prophet	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	162,973	80,568	82,405	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	174	0.21%	0.11%
2	2 - 10 years since fire	2,428	2.95%	1.49%
3	10 - 25 years since fire	6,121	7.43%	3.76%
4	25 - 50 years since fire	13,416	16.28%	8.23%
5	50 - 90 years since fire	18,229	22.12%	11.19%
6	> 90 years since fire	42,038	51.01%	75.23%

Puggins	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	141,582	27,841	113,741	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	434	0.38%	0.31%
1	0 - 2 years since fire	537	0.47%	0.38%
2	2 - 10 years since fire	70	0.06%	0.05%
3	10 - 25 years since fire	4,251	3.74%	3.00%
4	25 - 50 years since fire	11,441	10.06%	8.08%
5	50 - 90 years since fire	31,723	27.89%	22.41%
6	> 90 years since fire	65,285	57.40%	65.78%
Rabbit	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	288,789	8,044	280,745	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	-	0.00%	0.00%
2	2 - 10 years since fire	1,030	0.37%	0.36%
3	10 - 25 years since fire	7,082	2.52%	2.45%
4	25 - 50 years since fire	7,945	2.83%	2.75%
5	50 - 90 years since fire	99,353	35.39%	34.40%
6	> 90 years since fire	165,335	58.89%	60.04%
Redwillow	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	109,000	6,317	102,682	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	-	0.00%	0.00%
2	2 - 10 years since fire	5	0.00%	0.00%
3	10 - 25 years since fire	2	0.00%	0.00%
4	25 - 50 years since fire	21	0.02%	0.02%
5	50 - 90 years since fire	532	0.52%	0.49%
6	> 90 years since fire	102,123	99.46%	99.49%
Sandy	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	291,723	147,305	144,418	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	8	0.01%	0.00%
2	2 - 10 years since fire	6,513	4.51%	2.23%
3	10 - 25 years since fire	172	0.12%	0.06%
4	25 - 50 years since fire	30	0.02%	0.01%
5	50 - 90 years since fire	1,693	1.17%	0.58%
6	> 90 years since fire	136,002	94.17%	97.11%
Schooler	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	65,890	21,192	44,698	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	-	0.00%	0.00%
2	2 - 10 years since fire	546	1.22%	0.83%
3	10 - 25 years since fire	13	0.03%	0.02%
4	25 - 50 years since fire	1,987	4.45%	3.02%
5	50 - 90 years since fire	6,481	14.50%	9.84%
6	> 90 years since fire	35,672	79.81%	86.30%

Selwyn	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	44,556	20,324	24,232	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	55	0.23%	0.12%
1	0 - 2 years since fire	133	0.55%	0.30%
2	2 - 10 years since fire	1,843	7.61%	4.14%
3	10 - 25 years since fire	839	3.46%	1.88%
4	25 - 50 years since fire	73	0.30%	0.16%
5	50 - 90 years since fire	3,441	14.20%	7.72%
6	> 90 years since fire	17,848	73.65%	85.67%
Septimus	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	67,325	13,241	54,084	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	-	0.00%	0.00%
2	2 - 10 years since fire	61	0.11%	0.09%
3	10 - 25 years since fire	2,108	3.90%	3.13%
4	25 - 50 years since fire	7,384	13.65%	10.97%
5	50 - 90 years since fire	22,448	41.51%	33.34%
6	> 90 years since fire	22,083	40.83%	52.47%
Sharktooth	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	198,220	142,714	55,506	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	-	0.00%	0.00%
2	2 - 10 years since fire	-	0.00%	0.00%
3	10 - 25 years since fire	10,778	19.42%	5.44%
4	25 - 50 years since fire	1,123	2.02%	0.57%
5	50 - 90 years since fire	43,605	78.56%	94.00%
6	> 90 years since fire	-	0.00%	-
Shekilie	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	401,267	24,902	376,365	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	10	0.00%	0.00%
2	2 - 10 years since fire	12,371	3.29%	3.08%
3	10 - 25 years since fire	1,086	0.29%	0.27%
4	25 - 50 years since fire	35,154	9.34%	8.76%
5	50 - 90 years since fire	4,783	1.27%	1.19%
6	> 90 years since fire	322,961	85.81%	86.69%
Sikanni	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	310,408	42,898	267,510	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	-	0.00%	0.00%
2	2 - 10 years since fire	-	0.00%	0.00%
3	10 - 25 years since fire	7,298	2.73%	2.35%
4	25 - 50 years since fire	17,025	6.36%	5.48%
5	50 - 90 years since fire	6,726	2.51%	2.17%
6	> 90 years since fire	236,461	88.39%	90.00%

Smith	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	269,755	29,423	240,332	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	1	0.00%	0.00%
2	2 - 10 years since fire	27,094	11.27%	10.04%
3	10 - 25 years since fire	20,412	8.49%	7.57%
4	25 - 50 years since fire	67,519	28.09%	25.03%
5	50 - 90 years since fire	32,186	13.39%	11.93%
6	> 90 years since fire	93,120	38.75%	45.43%
Sulphur 8 Mile	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	438,594	112,550	326,044	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	1,535	0.47%	0.35%
1	0 - 2 years since fire	12	0.00%	0.00%
2	2 - 10 years since fire	5,316	1.63%	1.21%
3	10 - 25 years since fire	12,337	3.78%	2.81%
4	25 - 50 years since fire	86,325	26.48%	19.68%
5	50 - 90 years since fire	16,883	5.18%	3.85%
6	> 90 years since fire	203,637	62.46%	72.09%
Tommy Lakes	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	705,675	137,051	568,624	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	4	0%	0.00%
2	2 - 10 years since fire	6,270	1%	0.89%
3	10 - 25 years since fire	7,179	1%	1.02%
4	25 - 50 years since fire	17,326	2%	2.46%
5	50 - 90 years since fire	99,731	14%	14.13%
6	> 90 years since fire	438,112	62%	81.51%
Trutch	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	436,724	25,872	410,853	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	5	0.00%	0.00%
2	2 - 10 years since fire	29	0.01%	0.01%
3	10 - 25 years since fire	5,228	1.27%	1.20%
4	25 - 50 years since fire	7,200	1.75%	1.65%
5	50 - 90 years since fire	35,096	8.54%	8.04%
6	> 90 years since fire	363,295	88.42%	89.11%
Tuchodi	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	391,890	191,032	200,858	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	2,795	1.39%	0.71%
1	0 - 2 years since fire	-	0.00%	0.00%
2	2 - 10 years since fire	331	0.16%	0.08%
3	10 - 25 years since fire	4,170	2.08%	1.06%
4	25 - 50 years since fire	35,865	17.86%	9.15%
5	50 - 90 years since fire	8,702	4.33%	2.22%
6	> 90 years since fire	148,996	74.18%	86.77%

Upper Moberly	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	116,973	37,386	79,586	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	-	0.00%	0.00%
2	2 - 10 years since fire	4,580	5.76%	3.92%
3	10 - 25 years since fire	108	0.14%	0.09%
4	25 - 50 years since fire	5,500	6.91%	4.70%
5	50 - 90 years since fire	9,542	11.99%	8.16%
6	> 90 years since fire	59,855	75.21%	83.13%
Upper Sukunka	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	87,232	14,284	72,949	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	2	0.00%	0.00%
2	2 - 10 years since fire	393	0.54%	0.45%
3	10 - 25 years since fire	-	0.00%	0.00%
4	25 - 50 years since fire	-	0.00%	0.00%
5	50 - 90 years since fire	4,572	6.27%	5.24%
6	> 90 years since fire	67,982	93.19%	94.31%
Wapiti	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	94,809	6,101	88,708	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	-	0.00%	0.00%
2	2 - 10 years since fire	21,567	24.31%	22.75%
3	10 - 25 years since fire	4,069	4.59%	4.29%
4	25 - 50 years since fire	3,164	3.57%	3.34%
5	50 - 90 years since fire	3,370	3.80%	3.55%
6	> 90 years since fire	56,537	63.73%	66.07%
Wicked River	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	17,899	1,572	16,328	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	9	0.06%	0.05%
2	2 - 10 years since fire	-	0.00%	0.00%
3	10 - 25 years since fire	-	0.00%	0.00%
4	25 - 50 years since fire	204	1.25%	1.14%
5	50 - 90 years since fire	-	0.00%	0.00%
6	> 90 years since fire	16,115	98.70%	98.81%
Wolverine	LU area (ha)	Non-burnable area (ha)	Burnable area (ha)	
	94,163	75,925	18,237	
Class	**Distribution**	**Fire area (ha)**	**Fire area (%)**	**Fire area (% total LU)**
-1	Unknown	-	0.00%	0.00%
1	0 - 2 years since fire	-	0.00%	0.00%
2	2 - 10 years since fire	-	0.00%	0.00%
3	10 - 25 years since fire	-	0.00%	0.00%
4	25 - 50 years since fire	1,492	8.18%	1.58%
5	50 - 90 years since fire	8,349	45.78%	8.87%
6	> 90 years since fire	8,396	46.04%	89.55%

The least amount of time since fire is found within the 0 to 2 years since fire categories across all scales, ranging from 0 to 7.7% of the total burnable area. This is predictable since it is also the smallest range. The category with the longest time since fire, greater than 90 years, ranges from 68% across the Region to 93% of the total burnable area of the NDUs, which is actually the largest range because there is no upper boundary. These results show that the largest spatial distribution of time since fire occurs in greater than 90 years since fire. These results are consistent with the findings of Leverkus (2015) who discovered similar general trends regarding the distribution of fire across the Region.

Land Unit	Area (ha)	Non-burnable area (ha)	Burnable area (ha)
Anzac	80	35	46
Bastille	31,577	921	30,656
Bearhole	115,298	26,637	88,660
Beaver	184,342	2,586	181,756
Belcourt	110,990	35,762	75,228
Blueberry	731,433	89,030	642,403
Bluff Creek	24,474	9,652	14,822
Boreal	218,506	97,223	121,283
Boucher	39,332	15,621	23,711
Braid	131,898	70,077	61,820
Burnt - Lemoray	129,189	37,942	91,247
Carbon	95,617	34,727	60,890
Chukachida River	307	282	25
Churchill	453,911	359,198	94,713
Clarke	411,588	254,883	156,705
Clearwater	109,210	50,984	58,226
Cridland	263,311	100,156	163,155
Crying Girl	67,344	44,557	22,787
Dawson Creek	157,194	22,229	134,965
Dease-Liard	327,723	165,830	161,892
Dunlevy	49,910	16,149	33,761
East Pine	22,682	4,666	18,016
Fontinako	265	40	225
Fox	831	422	409
Framstead	631	15	616
Frog	261,904	178,725	83,179
Frog-Gataga	345,615	149,758	195,857
Gathto	392,743	168,312	224,431
Gething	62,030	14,416	47,614
Graham	334,189	72,133	262,056
Gwillim	138,070	66,819	71,251
Halfway	206,437	34,162	172,275
Highhat	93,009	20,072	72,937
Holden	241,358	2,822	238,537
Hudson's Hope	92,768	90,838	1,930
Hyland	494,959	49,903	445,056
Imperial - Monkman	121,905	12,813	109,092
Irene	235,983	9,591	226,392
Jarvis	1,759	61	1,698
Kahntah	749,247	343,280	405,967
Kechika	333,426	12,471	320,954
Kinuseo	135,693	44,756	90,936
Kiskatinaw	239,972	13,417	226,555
Kiwigana	443,334	223,064	220,270
Kledo	253,385	5,387	247,997
Klowee	194,691	46,159	148,532
Klua	460,601	139,355	321,246
Kobes	159,858	33,370	126,487
Kotcho	901,040	295,255	605,785
Kwadacha	25,034	433	24,601
Lake	30,168	29,973	195
Liard River	90,611	11,809	78,802
Liard River Corridor Park	90,111	6,418	83,693
Lower Beatton	498,457	49,981	448,476
Lower Moberly	98,304	20,020	78,283
Lower Ospika	558	12	546
Major Hart	267,228	115,765	151,463
Martin Creek	64,575	9,628	54,947
McCusker	645	18	627
Middle Stikine River	1,965	1,362	603
Milligan	473,968	410,869	63,098
Misinchinka	536	276	260
Missinka	64	1	63
Morfee	19	0	19
Muncho	239,702	133,667	106,035
Nabesche	91,342	11,118	80,224
Narraway	78,742	6,908	71,834
Nelson Forks	117,209	22,106	95,103
Netson	323,324	134,311	189,013
Obo River	282	245	37
One Island	191,030	32,746	158,284
Ovington	94	16	79
Parsnip	483	387	96
Petitot	794,819	545,642	249,177
Pine Pass	126,678	35,424	91,254
Pine River	93,082	20,811	72,272
Pitman River	2,148	1,477	671
Prophet	162,973	80,568	82,405
Puggins	141,582	27,841	113,741
Rabbit	288,789	8,044	280,745
Redwillow	109,000	6,317	102,682
Sandy	291,723	147,305	144,418
Schooler	65,890	21,192	44,698
Selwyn	44,556	20,324	24,232
Septimus	67,325	13,241	54,084
Sharktooth	198,220	142,714	55,506
Shekilie	401,267	24,902	376,365
Sikanni	310,408	42,898	267,510
Smith	269,755	29,423	240,332
Spakwaniko	36	26	9
Sulphur 8 Mile	438,594	112,550	326,044
Table	71	0	70
Tommy Lakes	705,675	137,051	568,624
Trutch	436,724	25,872	410,853
Tuchodi	391,890	191,032	200,858
Upper Akie River	823	62	761
Upper Gataga	99,878	91,009	8,869
Upper Moberly	116,973	37,386	79,586
Upper Stikine River	18	18	0
Upper Sukunka	87,232	14,284	72,949
Wapiti	94,809	6,101	88,708
Wicked River	17,899	1,572	16,328
Wolverine	94,163	75,925	18,237

Figure 11 Current non-burnable area across LUs in northeast BC, Region 7B with values in hectares.

The total areas burned by wildfire from 1922 – 2018 in each LU of the Region range from 27 ha (9% of the Chukachida River LU) to 466, 000ha (73% of the Blueberry burnable area or 64% of the total LU). Area burned by prescribed fire across the same LUs from 1980 – 2008 ranges from 0% to 37, 820ha (12% of the Sulphur/8 Mile burnable area or 9% of the whole LU). These numbers represent total areas acknowledging that over the past century, some areas may have burned multiple times. We only include a comparison to the burnable area and not the entire LU, however, it is possible that areas outside of the designated burnable area within each LU may have burned in the past and may also be receptive to fire in the future. It is possible that there may be some LUs that have experienced more fire than 0 to 10% of the burnable area. If the desire is to have 10% or less of the LU in recent fire, then other LUs could be targeted for treatment. However, if the LU includes critical areas for species requiring more recent fire across the landscape, perhaps the range should increase to an upper limit of 15% or 20% of the burnable area burned within 2 years.

Landscape Unit	Fire Type	Fire area (ha)	Max fire area (ha)	Min fire area (ha)	Burnable area	% burnable	% max	% min	Total area	% total area	% max	% min
Bearhole	Wildfire	432	142	0	88,660	0.49	0.16	0.00	115,298	0.37	0.12	0.00
Beaver	Wildfire	34,729	12,038	5	181,756	19.11	6.62	0.00	184,342	18.84	6.53	0.00
Belcourt	Wildfire	17,171	9,104	1	75,228	22.83	12.10	0.00	110,990	15.47	8.20	0.00
Blueberry	Prescribed	1,429	389	0	642,403	0.22	0.06	0.00	731,433	0.20	0.05	0.00
Blueberry	Wildfire	466,580	48,486	0	642,403	72.63	7.55	0.00	731,433	63.79	6.63	0.00
Boreal	Prescribed	4,841	2,747	0	121,283	3.99	2.27	0.00	218,506	2.22	1.26	0.00
Boreal	Wildfire	87,780	49,661	4	121,283	72.38	40.95	0.00	218,506	40.17	22.73	0.00
Boucher	Wildfire	8,422	2,773	0	23,711	35.52	11.70	0.00	39,332	21.41	7.05	0.00
Braid	Wildfire	6,926	4,364	2,562	61,820	11.20	7.06	4.14	131,898	5.25	3.31	1.94
Burnt - Lemoray	Wildfire	11,486	5,777	1	91,247	12.59	6.33	0.00	129,189	8.89	4.47	0.00
Carbon	Wildfire	5,776	5,363	0	60,890	9.49	8.81	0.00	95,617	6.04	5.61	0.00
Chukachida River	Wildfire	27	27	27	25	105.62	105.62	105.62	307	8.73	8.73	8.73
Churchill	Prescribed	25,243	3,549	0	94,713	26.65	3.75	0.00	453,911	5.56	0.78	0.00
Churchill	Wildfire	39,787	6,546	0	94,713	42.01	6.91	0.00	453,911	8.77	1.44	0.00
Clarke	Wildfire	118,762	31,846	0	156,705	75.79	20.32	0.00	411,588	28.85	7.74	0.00
Clearwater	Wildfire	4,425	2,830	4	58,226	7.60	4.86	0.01	109,210	4.05	2.59	0.00
Cridland	Wildfire	72,703	39,870	0	163,155	44.56	24.44	0.00	263,311	27.61	15.14	0.00
Crying Girl	Prescribed	2,150	713	3	22,787	9.43	3.13	0.01	67,344	3.19	1.06	0.00
Crying Girl	Wildfire	3,770	1,254	0	22,787	16.54	5.50	0.00	67,344	5.60	1.86	0.00
Dawson Creek	Wildfire	10,285	1,257	0	134,965	7.62	0.93	0.00	157,194	6.54	0.80	0.00
Dease-Liard	Wildfire	18,017	5,278	10	161,892	11.13	3.26	0.01	327,723	5.50	1.61	0.00
Dunlevy	Prescribed	1,269	370	0	33,761	3.76	1.09	0.00	49,910	2.54	0.74	0.00
Dunlevy	Wildfire	19,603	12,565	0	33,761	58.06	37.22	0.00	49,910	39.28	25.17	0.00
East Pine	Wildfire	12,250	1,672	0	18,016	67.99	9.28	0.00	22,682	54.01	7.37	0.00
Frog	Prescribed	0	0	0	83,179	0.00	0.00	0.00	261,904	0.00	0.00	0.00
Frog	Wildfire	10,049	4,049	530	83,179	12.08	4.87	0.64	261,904	3.84	1.55	0.20
Frog-Gataga	Prescribed	8,045	2,288	1	195,857	4.11	1.17	0.00	345,615	2.33	0.66	0.00
Frog-Gataga	Wildfire	31,514	5,612	1	195,857	16.09	2.87	0.00	345,615	9.12	1.62	0.00
Gathto	Prescribed	19,289	1,927	0	224,431	8.59	0.86	0.00	392,743	4.91	0.49	0.00
Gathto	Wildfire	49,536	12,304	0	224,431	22.07	5.48	0.00	392,743	12.61	3.13	0.00
Gething	Wildfire	22,652	12,246	0	47,614	47.58	25.72	0.00	62,030	36.52	19.74	0.00
Graham	Prescribed	13,591	1,923	0	262,056	5.19	0.73	0.00	334,189	4.07	0.58	0.00
Graham	Wildfire	15,881	5,108	0	262,056	6.06	1.95	0.00	334,189	4.75	1.53	0.00
Gwillim	Prescribed	85	85	85	71,251	0.12	0.12	0.12	138,070	0.06	0.06	0.06
Gwillim	Wildfire	9,499	4,562	0	71,251	13.33	6.40	0.00	138,070	6.88	3.30	0.00
Halfway	Prescribed	2,707	732	0	172,275	1.57	0.42	0.00	206,437	1.31	0.35	0.00
Halfway	Wildfire	16,996	3,776	0	172,275	9.87	2.19	0.00	206,437	8.23	1.83	0.00
Highhat	Prescribed	174	174	174	72,937	0.24	0.24	0.24	93,009	0.19	0.19	0.19
Highhat	Wildfire	6,466	5,687	0	72,937	8.87	7.80	0.00	93,009	6.95	6.11	0.00
Holden	Prescribed	8,748	1,746	0	238,537	3.67	0.73	0.00	241,358	3.62	0.72	0.00
Holden	Wildfire	139,107	46,394	0	238,537	58.32	19.45	0.00	241,358	57.63	19.22	0.00
Hudson's Hope	Prescribed	142	49	12	1,930	7.35	2.52	0.60	92,768	0.15	0.05	0.01
Hudson's Hope	Wildfire	39,912	5,762	0	1,930	2,067.49	298.46	0.00	92,768	43.02	6.21	0.00
Hyland	Prescribed	15,749	2,804	0	445,056	3.54	0.63	0.00	494,959	3.18	0.57	0.00
Hyland	Wildfire	134,896	68,803	0	445,056	30.31	15.46	0.00	494,959	27.25	13.90	0.00
Imperial - Monkman	Wildfire	5,015	2,836	0	109,092	4.60	2.60	0.00	121,905	4.11	2.33	0.00
Irene	Wildfire	3,209	2,248	2	226,392	1.42	0.99	0.00	235,983	1.36	0.95	0.00
Kahntah	Wildfire	61,914	12,660	1	405,967	15.25	3.12	0.00	749,247	8.26	1.69	0.00
Kechika	Prescribed	6,761	1,793	4	320,954	2.11	0.56	0.00	333,426	2.03	0.54	0.00
Kechika	Wildfire	220,175	50,228	0	90,936	242.12	55.23	0.00	135,693	162.26	37.02	0.00
Kinuseo	Wildfire	11,960	7,249	0	90,936	13.15	7.97	0.00	135,693	8.81	5.34	0.00
Kiskatinaw	Wildfire	121,354	16,545	0	226,555	53.56	7.30	0.00	239,972	50.57	6.89	0.00
Kiwigana	Wildfire	8,986	2,648	0	220,270	4.08	1.20	0.00	443,334	2.03	0.60	0.00
Kledo	Prescribed	1,550	1,213	14	247,997	0.63	0.49	0.01	253,385	0.61	0.48	0.01
Kledo	Wildfire	56,866	21,848	3	247,997	22.93	8.81	0.00	253,385	22.44	8.62	0.00
Klowee	Wildfire	66,229	32,062	0	148,532	44.59	21.59	0.00	194,691	34.02	16.47	0.00
Klua	Prescribed	1,048	1,047	1	321,246	0.33	0.33	0.00	460,601	0.23	0.23	0.00
Klua	Wildfire	52,045	7,787	0	321,246	16.20	2.42	0.00	460,601	11.30	1.69	0.00
Kobes	Prescribed	457	441	0	126,487	0.36	0.35	0.00	159,858	0.29	0.28	0.00
Kobes	Wildfire	11,997	5,570	0	126,487	9.48	4.40	0.00	159,858	7.50	3.48	0.00
Kotcho	Wildfire	121,960	16,894	0	605,785	20.13	2.79	0.00	901,040	13.54	1.87	0.00
Lake	Prescribed	144	45	0	195	73.86	23.25	0.03	30,168	0.48	0.15	0.00
Lake	Wildfire	2,786	1,379	0	195	1,428.74	707.47	0.00	30,168	9.23	4.57	0.00
Liard River	Wildfire	82,291	31,792	1	78,802	104.43	40.34	0.00	90,611	90.82	35.09	0.00
Liard River Corridor Park	Prescribed	8,066	2,680	0	83,693	9.64	3.20	0.00	90,111	8.95	2.97	0.00
Liard River Corridor Park	Wildfire	63,426	7,801	0	83,693	75.78	9.32	0.00	90,111	70.39	8.66	0.00
Lower Beatton	Prescribed	6,743	2,043	0	448,476	1.50	0.46	0.00	498,457	1.35	0.41	0.00
Lower Beatton	Wildfire	259,393	29,394	0	448,476	57.84	6.55	0.00	498,457	52.04	5.90	0.00
Lower Moberly	Prescribed	1,980	1,377	1	78,283	2.53	1.76	0.00	98,304	2.01	1.40	0.00
Lower Moberly	Wildfire	31,092	5,369	0	78,283	39.72	6.86	0.00	98,304	31.63	5.46	0.00
Major Hart	Wildfire	34,923	8,414	0	151,463	23.06	5.55	0.00	267,228	13.07	3.15	0.00
Martin Creek	Prescribed	852	461	84	54,947	1.55	0.84	0.15	64,575	1.32	0.71	0.13
Martin Creek	Wildfire	3,526	2,364	0	54,947	6.42	4.30	0.00	64,575	5.46	3.66	0.00
Milligan	Prescribed	2,675	757	19	63,098	4.24	1.20	0.03	473,968	0.56	0.16	0.00
Milligan	Wildfire	163,934	75,081	0	63,098	259.81	118.99	0.00	473,968	34.59	15.84	0.00
Muncho	Wildfire	42,081	30,844	0	106,035	39.69	29.09	0.00	239,702	17.56	12.87	0.00
Nabesche	Wildfire	8,224	7,979	27	80,224	10.25	9.95	0.03	91,342	9.00	8.74	0.03
Narraway	Wildfire	175	92	83	71,834	0.24	0.13	0.12	78,742	0.22	0.12	0.11
Nelson Forks	Wildfire	4,603	1,775	0	95,103	4.84	1.87	0.00	117,209	3.93	1.51	0.00
Netson	Prescribed	5,481	1,466	6	189,013	2.90	0.78	0.00	323,324	1.70	0.45	0.00
Netson	Wildfire	28,650	11,741	0	189,013	15.16	6.21	0.00	323,324	8.86	3.63	0.00
One Island	Prescribed	724	482	242	158,284	0.46	0.30	0.15	191,030	0.38	0.25	0.13
One Island	Wildfire	17,337	4,556	0	158,284	10.95	2.88	0.00	191,030	9.08	2.38	0.00
Petitot	Wildfire	107,769	23,707	0	249,177	43.25	9.51	0.00	794,819	13.56	2.98	0.00
Pine Pass	Wildfire	9,456	4,432	0	91,254	10.36	4.86	0.00	126,678	7.46	3.50	0.00
Pine River	Prescribed	608	608	608	72,272	0.84	0.84	0.84	93,082	0.65	0.65	0.65
Pine River	Wildfire	42,159	4,341	0	72,272	58.33	6.01	0.00	93,082	45.29	4.66	0.00
Prophet	Prescribed	19,233	1,418	0	82,405	23.34	1.72	0.00	162,973	11.80	0.87	0.00
Prophet	Wildfire	24,936	13,348	0	82,405	30.26	16.20	0.00	162,973	15.30	8.19	0.00
Puggins	Prescribed	3,483	687	2	113,741	3.06	0.60	0.00	141,582	2.46	0.49	0.00
Puggins	Wildfire	45,680	9,353	0	113,741	40.16	8.22	0.00	141,582	32.26	6.61	0.00
Rabbit	Prescribed	3,576	2,153	36	280,745	1.27	0.77	0.01	288,789	1.24	0.75	0.01
Rabbit	Wildfire	115,410	78,495	1	280,745	41.11	27.96	0.00	288,789	39.96	27.18	0.00
Redwillow	Wildfire	560	426	0	102,682	0.54	0.41	0.00	109,000	0.51	0.39	0.00
Sandy	Wildfire	8,416	3,968	0	144,418	5.83	2.75	0.00	291,723	2.89	1.36	0.00
Schooler	Prescribed	13	13	1	44,698	0.03	0.03	0.00	65,890	0.02	0.02	0.00
Schooler	Wildfire	13,803	4,158	1	44,698	30.88	9.30	0.00	65,890	20.95	6.31	0.00
Selwyn	Prescribed	830	405	10	44,556	1.86	0.91	0.02	24,232	3.42	1.67	0.04
Selwyn	Wildfire	6,346	1,438	1	44,556	14.24	3.23	0.00	24,232	26.19	5.93	0.01
Septimus	Prescribed	2,081	482	0	54,084	3.85	0.89	0.00	67,325	3.09	0.72	0.00
Septimus	Wildfire	29,920	7,484	0	54,084	55.32	13.84	0.00	67,325	44.44	11.12	0.00
Sheklile	Wildfire	53,404	17,585	0	376,365	14.19	4.67	0.00	401,267	13.31	4.38	0.00
Sikanni	Prescribed	20,495	915	0	267,510	7.66	0.34	0.00	310,408	6.60	0.29	0.00
Sikanni	Wildfire	12,863	6,210	1	267,510	4.81	2.32	0.00	310,408	4.14	2.00	0.00
Smith	Wildfire	147,213	36,098	0	240,332	61.25	15.02	0.00	269,755	54.57	13.38	0.00
Sulphur 8 Mile	Prescribed	37,820	4,480	0	326,044	11.60	1.37	0.00	438,594	8.62	1.02	0.00
Sulphur 8 Mile	Wildfire	91,481	27,245	0	326,044	28.06	8.36	0.00	438,594	20.86	6.21	0.00
Tommy Lakes	Wildfire	130,511	20,546	0	568,624	22.95	3.61	0.00	705,675	18.49	2.91	0.00
Trutch	Prescribed	2,334	1,042	1	410,853	0.57	0.25	0.00	436,724	0.53	0.24	0.00
Trutch	Wildfire	45,325	12,710	0	410,853	11.03	3.09	0.00	436,724	10.38	2.91	0.00
Tuchodi	Prescribed	32,866	2,517	0	200,858	16.36	1.25	0.00	391,890	8.39	0.64	0.00
Tuchodi	Wildfire	26,153	6,113	0	200,858	13.02	3.04	0.00	391,890	6.67	1.56	0.00
Upper Moberly	Wildfire	19,731	5,186	0	79,586	24.79	6.52	0.00	116,973	16.87	4.43	0.00
Upper Sukunka	Wildfire	4,966	3,924	0	72,949	6.81	5.38	0.00	87,232	5.69	4.50	0.00
Wapiti	Prescribed	1,051	1,051	1,051	88,708	1.19	1.19	1.19	94,809	1.11	1.11	1.11
Wapiti	Wildfire	31,119	16,235	1	88,708	35.08	18.30	0.00	94,809	32.82	17.12	0.00
Wicked River	Wildfire	213	204	9	16,328	1.30	1.25	0.06	17,899	1.19	1.14	0.05
Wolverine	Wildfire	10,406	7,920	0	18,237	57.06	43.43	0.00	94,163	11.05	8.41	0.00

Figure 12 Historical fire statistics were developed from the two fire datasets to characterize total fire areas (ha), and maximum and minimum fire areas in comparison to the developed burnable landscape and the whole area of the LUs.

Potential Target Fire Matrix

A second matrix has been developed which outlines the potential distribution of time since fire across the landscape while acknowledging the resource requirements of wildlife and livestock in line with the thirteen prescribed fire values, as proposed by Leverkus *et al.* (2017). The proposed potential ranges of burnable area to target for prescribed fire across the Region in time since fire classes are: 0-2 years (0-10%), 2-10 years (5-15%), 10-25 years (10-20%), 25-50 years (10-20%), 50-90 years (15-30%), >90 years (25-55%).

Potential target (burnable) area (ha)

Location	**Location area (ha)**	**Burnable area (ha)**
	XXX, xxx	YYY, yyy
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	burnable area*0	burnable area*0.1
2 - 10 years since fire (5-15)	burnable*0.05	burnable area*0.15
10 - 25 years since fire (10-20)	burnable area*0.1	burnable area*0.2
25 - 50 years since fire (10-20)	burnable area*0.1	burnable area*0.2
50 - 90 years since fire (15-30)	burnable area*0.15	burnable area*0.3
> 90 years since fire (25-55)	burnable area*0.25	burnable area*0.55

Figure 13 The potential burnable area is calculated by multiplying the burnable area times the percent ranges for each time since fire category.

In order to support and achieve the thirteen prescribed fire values, a theorized potential target matrix has been developed which includes a range of fire (in hectares) to be achieved in each time since fire category. Theoretical ranges were developed by Leverkus (2015) and discussed in Leverkus *et al.* (2017). Our research, literature review, and the Part A rationale supports a shifting mosaic of fire through space and time, and that there are significant resource requirements of wildlife for recent fire across the landscape to select. Therefore, we consider that across the Region there could be a range of 0 – 10% of the landscape that has been burned between 0-2 years. This range provides the target area of 0 to 1.3 million hectares burned to support the identified prescribed values while acknowledging that there is are many requirements to have areas that receive less fire for other values. Additional consideration should be made to the non-burnable layer and the area within it that may be susceptible to fire. Assumptions made in the development of these matrices compare area burned to the burnable area rather than total area across each scale. A second approximation could be refined to include only non-fuels such as rock, current snow and ice and water to capture a comparison of truly non-burnable fuels and the historical fire footprint across each scale. It would be recommended that this develops into adaptive management and that as each year passes, the time since fire and burnable area analyses be revisited as current data becomes available.

Potential target (burnable) area (ha)		
Region 7B	**R7B area (ha)**	**Burnable area (ha)**
	19,116,924	12,784,606
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	1,278,461
2 - 10 years since fire (5-15)	639,230	1,917,691
10 - 25 years since fire (10-20)	1,278,461	2,556,921
25 - 50 years since fire (10-20)	1,278,461	2,556,921
50 - 90 years since fire (15-30)	1,917,691	3,835,382
> 90 years since fire (25-55)	3,196,151	7,031,533

Figure 14 A theorized potential target matrix for the spatio-temporal distribution of fire across the Region to meet multiple values and objectives. Currently, almost 13 million hectares across the Region could be receptive and available to fire. In light of multiple needs across the region for varying vegetation heights, tree ages, and biological diversity, a shifting mosaic of time since fire has been developed in which 0 to 1.3 million hectares could be burned within 0 – 2 years to meet recent time since fire goals. Conversely, this allows for up to 11.5 million hectares to be free of recent fire.

Potential target (burnable) area (ha)		
Boreal Foothills	**NDU area (ha)**	**Burnable area (ha)**
	1,183,662	693,744
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	69,374
2 - 10 years since fire (5-15)	34,687	104,062
10 - 25 years since fire (10-20)	69,374	138,749
25 - 50 years since fire (10-20)	69,374	138,749
50 - 90 years since fire (15-30)	104,062	208,123
> 90 years since fire (25-55)	173,436	381,559
Potential target (burnable) area (ha)		
Boreal Plains	**NDU area (ha)**	**Burnable area (ha)**
	9,758,440	6,545,396
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	654,540
2 - 10 years since fire (5-15)	327,270	981,809
10 - 25 years since fire (10-20)	654,540	1,309,079
25 - 50 years since fire (10-20)	654,540	1,309,079
50 - 90 years since fire (15-30)	981,809	1,963,619
> 90 years since fire (25-55)	1,636,349	3,599,968
Potential target (burnable) area (ha)		
Northern Boreal Mountains	**NDU area (ha)**	**Burnable area (ha)**
	6,882,890	4,652,663
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	465,266
2 - 10 years since fire (5-15)	232,633	697,899
10 - 25 years since fire (10-20)	465,266	930,533
25 - 50 years since fire (10-20)	465,266	930,533
50 - 90 years since fire (15-30)	697,899	1,395,799
> 90 years since fire (25-55)	1,163,166	2,558,965
Potential target (burnable) area (ha)		
Omineca	**NDU area (ha)**	**Burnable area (ha)**
	325,919	269,952
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	26,995
2 - 10 years since fire (5-15)	13,498	40,493
10 - 25 years since fire (10-20)	26,995	53,990
25 - 50 years since fire (10-20)	26,995	53,990
50 - 90 years since fire (15-30)	40,493	80,986
> 90 years since fire (25-55)	67,488	148,473
Potential target (burnable) area (ha)		
Wet Mountain	**NDU area (ha)**	**Burnable area (ha)**
	574,335	409,603
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	40,960
2 - 10 years since fire (5-15)	20,480	61,441
10 - 25 years since fire (10-20)	40,960	81,921
25 - 50 years since fire (10-20)	40,960	81,921
50 - 90 years since fire (15-30)	61,441	122,881
> 90 years since fire (25-55)	102,401	225,282

Figure 15 A theorized potential target matrix for the spatio-temporal distribution of fire across the Natural Disturbance Units (NDUs) to meet multiple values and objectives. The distribution of fire across 6 time since fire classes is projected with percent ranges in brackets showing a minimum to maximum area of fire in hectares. The Wet Trench NDU has not been included in this matrix.

Potential target (burnable) area (ha)		
Bearhole	**LU area (ha)**	**Burnable area (ha)**
	115,298	88,660
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	8,866
2 - 10 years since fire (5-15)	4,433	13,299
10 - 25 years since fire (10-20)	8,866	17,732
25 - 50 years since fire (10-20)	8,866	17,732
50 - 90 years since fire (15-30)	13,299	26,598
> 90 years since fire (25-55)	22,165	48,763

Potential target (burnable) area (ha)		
Beaver	**LU area (ha)**	**Burnable area (ha)**
	184,342	181,756
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	18,176
2 - 10 years since fire (5-15)	9,088	27,263
10 - 25 years since fire (10-20)	18,176	36,351
25 - 50 years since fire (10-20)	18,176	36,351
50 - 90 years since fire (15-30)	27,263	54,527
> 90 years since fire (25-55)	45,439	99,966

Potential target (burnable) area (ha)		
Belcourt	**LU area (ha)**	**Burnable area (ha)**
	110,990	75,228
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	7,523
2 - 10 years since fire (5-15)	3,761	11,284
10 - 25 years since fire (10-20)	7,523	15,046
25 - 50 years since fire (10-20)	7,523	15,046
50 - 90 years since fire (15-30)	11,284	22,569
> 90 years since fire (25-55)	18,807	41,376

Potential target (burnable) area (ha)		
Blueberry	**LU area (ha)**	**Burnable area (ha)**
	731,433	642,403
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	64,240
2 - 10 years since fire (5-15)	32,120	96,360
10 - 25 years since fire (10-20)	64,240	128,481
25 - 50 years since fire (10-20)	64,240	128,481
50 - 90 years since fire (15-30)	96,360	192,721
> 90 years since fire (25-55)	160,601	353,322

Potential target (burnable) area (ha)		
Boreal	**LU area (ha)**	**Burnable area (ha)**
	218,506	121,283
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	12,128
2 - 10 years since fire (5-15)	6,064	18,192
10 - 25 years since fire (10-20)	12,128	24,257
25 - 50 years since fire (10-20)	12,128	24,257
50 - 90 years since fire (15-30)	18,192	36,385
> 90 years since fire (25-55)	30,321	66,706

Potential target (burnable) area (ha)		
Boucher	**LU area (ha)**	**Burnable area (ha)**
	39,332	23,711
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	2,371
2 - 10 years since fire (5-15)	1,186	3,557
10 - 25 years since fire (10-20)	2,371	4,742
25 - 50 years since fire (10-20)	2,371	4,742
50 - 90 years since fire (15-30)	3,557	7,113
> 90 years since fire (25-55)	5,928	13,041
Potential target (burnable) area (ha)		
Braid	**LU area (ha)**	**Burnable area (ha)**
	131,898	61,820
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	6,182
2 - 10 years since fire (5-15)	3,091	9,273
10 - 25 years since fire (10-20)	6,182	12,364
25 - 50 years since fire (10-20)	6,182	12,364
50 - 90 years since fire (15-30)	9,273	18,546
> 90 years since fire (25-55)	15,455	34,001
Potential target (burnable) area (ha)		
Burnt – Lemoray	**LU area (ha)**	**Burnable area (ha)**
	129,189	91,247
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	9,125
2 - 10 years since fire (5-15)	4,562	13,687
10 - 25 years since fire (10-20)	9,125	18,249
25 - 50 years since fire (10-20)	9,125	18,249
50 - 90 years since fire (15-30)	13,687	27,374
> 90 years since fire (25-55)	22,812	50,186
Potential target (burnable) area (ha)		
Carbon	**LU area (ha)**	**Burnable area (ha)**
	95,617	60,890
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	6,089
2 - 10 years since fire (5-15)	3,044	9,133
10 - 25 years since fire (10-20)	6,089	12,178
25 - 50 years since fire (10-20)	6,089	12,178
50 - 90 years since fire (15-30)	9,133	18,267
> 90 years since fire (25-55)	15,222	33,489
Potential target (burnable) area (ha)		
Chukachida River	**LU area (ha)**	**Burnable area (ha)**
	307	25
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	3
2 - 10 years since fire (5-15)	1	4
10 - 25 years since fire (10-20)	3	5
25 - 50 years since fire (10-20)	3	5
50 - 90 years since fire (15-30)	4	8
> 90 years since fire (25-55)	6	14

Potential target (burnable) area (ha)		
Churchill	**LU area (ha)**	**Burnable area (ha)**
	453,911	94,713
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	9,471
2 - 10 years since fire (5-15)	4,736	14,207
10 - 25 years since fire (10-20)	9,471	18,943
25 - 50 years since fire (10-20)	9,471	18,943
50 - 90 years since fire (15-30)	14,207	28,414
> 90 years since fire (25-55)	23,678	52,092

Potential target (burnable) area (ha)		
Clarke	**LU area (ha)**	**Burnable area (ha)**
	411,588	156,705
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	15,670
2 - 10 years since fire (5-15)	7,835	23,506
10 - 25 years since fire (10-20)	15,670	31,341
25 - 50 years since fire (10-20)	15,670	31,341
50 - 90 years since fire (15-30)	23,506	47,011
> 90 years since fire (25-55)	39,176	86,188

Potential target (burnable) area (ha)		
Clearwater	**LU area (ha)**	**Burnable area (ha)**
	109,210	58,226
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	5,823
2 - 10 years since fire (5-15)	2,911	8,734
10 - 25 years since fire (10-20)	5,823	11,645
25 - 50 years since fire (10-20)	5,823	11,645
50 - 90 years since fire (15-30)	8,734	17,468
> 90 years since fire (25-55)	14,556	32,024

Potential target (burnable) area (ha)		
Cridland	**LU area (ha)**	**Burnable area (ha)**
	263,311	163,155
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	16,315
2 - 10 years since fire (5-15)	8,158	24,473
10 - 25 years since fire (10-20)	16,315	32,631
25 - 50 years since fire (10-20)	16,315	32,631
50 - 90 years since fire (15-30)	24,473	48,946
> 90 years since fire (25-55)	40,789	89,735

Potential target (burnable) area (ha)		
Crying Girl	**LU area (ha)**	**Burnable area (ha)**
	67,344	22,787
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	2,279
2 - 10 years since fire (5-15)	1,139	3,418
10 - 25 years since fire (10-20)	2,279	4,557
25 - 50 years since fire (10-20)	2,279	4,557
50 - 90 years since fire (15-30)	3,418	6,836
> 90 years since fire (25-55)	5,697	12,533

Potential target (burnable) area (ha)		
Dawson Creek	**LU area (ha)**	**Burnable area (ha)**
	157,194	134,965
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	13,497
2 - 10 years since fire (5-15)	6,748	20,245
10 - 25 years since fire (10-20)	13,497	26,993
25 - 50 years since fire (10-20)	13,497	26,993
50 - 90 years since fire (15-30)	20,245	40,490
> 90 years since fire (25-55)	33,741	74,231

Potential target (burnable) area (ha)		
Dease-Liard	**LU area (ha)**	**Burnable area (ha)**
	327,723	161,892
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	16,189
2 - 10 years since fire (5-15)	8,095	24,284
10 - 25 years since fire (10-20)	16,189	32,378
25 - 50 years since fire (10-20)	16,189	32,378
50 - 90 years since fire (15-30)	24,284	48,568
> 90 years since fire (25-55)	40,473	89,041

Potential target (burnable) area (ha)		
Dunlevy	**LU area (ha)**	**Burnable area (ha)**
	49,910	33,761
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	3,376
2 - 10 years since fire (5-15)	1,688	5,064
10 - 25 years since fire (10-20)	3,376	6,752
25 - 50 years since fire (10-20)	3,376	6,752
50 - 90 years since fire (15-30)	5,064	10,128
> 90 years since fire (25-55)	8,440	18,569

Potential target (burnable) area (ha)		
East Pine	**LU area (ha)**	**Burnable area (ha)**
	22,682	18,016
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	1,802
2 - 10 years since fire (5-15)	901	2,702
10 - 25 years since fire (10-20)	1,802	3,603
25 - 50 years since fire (10-20)	1,802	3,603
50 - 90 years since fire (15-30)	2,702	5,405
> 90 years since fire (25-55)	4,504	9,909

Potential target (burnable) area (ha)		
Frog	**LU area (ha)**	**Burnable area (ha)**
	261,904	83,179
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	8,318
2 - 10 years since fire (5-15)	4,159	12,477
10 - 25 years since fire (10-20)	8,318	16,636
25 - 50 years since fire (10-20)	8,318	16,636
50 - 90 years since fire (15-30)	12,477	24,954
> 90 years since fire (25-55)	20,795	45,748

Potential target (burnable) area (ha)		
Frog-Gataga	**LU area (ha)**	**Burnable area (ha)**
	345,615	195,857
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	19,586
2 - 10 years since fire (5-15)	9,793	29,379
10 - 25 years since fire (10-20)	19,586	39,171
25 - 50 years since fire (10-20)	19,586	39,171
50 - 90 years since fire (15-30)	29,379	58,757
> 90 years since fire (25-55)	48,964	107,721

Potential target (burnable) area (ha)		
Gathto	**LU area (ha)**	**Burnable area (ha)**
	392,743	224,431
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	22,443
2 - 10 years since fire (5-15)	11,222	33,665
10 - 25 years since fire (10-20)	22,443	44,886
25 - 50 years since fire (10-20)	22,443	44,886
50 - 90 years since fire (15-30)	33,665	67,329
> 90 years since fire (25-55)	56,108	123,437

Potential target (burnable) area (ha)		
Gething	**LU area (ha)**	**Burnable area (ha)**
	62,030	47,614
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	4,761
2 - 10 years since fire (5-15)	2,381	7,142
10 - 25 years since fire (10-20)	4,761	9,523
25 - 50 years since fire (10-20)	4,761	9,523
50 - 90 years since fire (15-30)	7,142	14,284
> 90 years since fire (25-55)	11,903	26,188

Potential target (burnable) area (ha)		
Graham	**LU area (ha)**	**Burnable area (ha)**
	334,189	262,056
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	26,206
2 - 10 years since fire (5-15)	13,103	39,308
10 - 25 years since fire (10-20)	26,206	52,411
25 - 50 years since fire (10-20)	26,206	52,411
50 - 90 years since fire (15-30)	39,308	78,617
> 90 years since fire (25-55)	65,514	144,131

Potential target (burnable) area (ha)		
Gwillim	**LU area (ha)**	**Burnable area (ha)**
	138,070	71,251
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	7,125
2 - 10 years since fire (5-15)	3,563	10,688
10 - 25 years since fire (10-20)	7,125	14,250
25 - 50 years since fire (10-20)	7,125	14,250
50 - 90 years since fire (15-30)	10,688	21,375
> 90 years since fire (25-55)	17,813	39,188

Potential target (burnable) area (ha)		
Halfway	**LU area (ha)**	**Burnable area (ha)**
	206,437	172,275
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	17,228
2 - 10 years since fire (5-15)	8,614	25,841
10 - 25 years since fire (10-20)	17,228	34,455
25 - 50 years since fire (10-20)	17,228	34,455
50 - 90 years since fire (15-30)	25,841	51,683
> 90 years since fire (25-55)	43,069	94,751
Potential target (burnable) area (ha)		
Highhat	**LU area (ha)**	**Burnable area (ha)**
	93,009	72,937
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	7,294
2 - 10 years since fire (5-15)	3,647	10,941
10 - 25 years since fire (10-20)	7,294	14,587
25 - 50 years since fire (10-20)	7,294	14,587
50 - 90 years since fire (15-30)	10,941	21,881
> 90 years since fire (25-55)	18,234	40,115
Potential target (burnable) area (ha)		
Holden	**LU area (ha)**	**Burnable area (ha)**
	241,358	238,537
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	23,854
2 - 10 years since fire (5-15)	11,927	35,781
10 - 25 years since fire (10-20)	23,854	47,707
25 - 50 years since fire (10-20)	23,854	47,707
50 - 90 years since fire (15-30)	35,781	71,561
> 90 years since fire (25-55)	59,634	131,195
Potential target (burnable) area (ha)		
Hudson's Hope	**LU area (ha)**	**Burnable area (ha)**
	92,768	1,930
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	193
2 - 10 years since fire (5-15)	97	290
10 - 25 years since fire (10-20)	193	386
25 - 50 years since fire (10-20)	193	386
50 - 90 years since fire (15-30)	290	579
> 90 years since fire (25-55)	483	1,062
Potential target (burnable) area (ha)		
Hyland	**LU area (ha)**	**Burnable area (ha)**
	494,959	445,056
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	44,506
2 - 10 years since fire (5-15)	22,253	66,758
10 - 25 years since fire (10-20)	44,506	89,011
25 - 50 years since fire (10-20)	44,506	89,011
50 - 90 years since fire (15-30)	66,758	133,517
> 90 years since fire (25-55)	111,264	244,781

Potential target (burnable) area (ha)		
Imperial - Monkman	**LU area (ha)**	**Burnable area (ha)**
	121,905	109,092
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	10,909
2 - 10 years since fire (5-15)	5,455	16,364
10 - 25 years since fire (10-20)	10,909	21,818
25 - 50 years since fire (10-20)	10,909	21,818
50 - 90 years since fire (15-30)	16,364	32,728
> 90 years since fire (25-55)	27,273	60,001

Potential target (burnable) area (ha)		
Irene	**LU area (ha)**	**Burnable area (ha)**
	235,983	226,392
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	22,639
2 - 10 years since fire (5-15)	11,320	33,959
10 - 25 years since fire (10-20)	22,639	45,278
25 - 50 years since fire (10-20)	22,639	45,278
50 - 90 years since fire (15-30)	33,959	67,918
> 90 years since fire (25-55)	56,598	124,516

Potential target (burnable) area (ha)		
Kahntah	**LU area (ha)**	**Burnable area (ha)**
	749,247	405,967
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	40,597
2 - 10 years since fire (5-15)	20,298	60,895
10 - 25 years since fire (10-20)	40,597	81,193
25 - 50 years since fire (10-20)	40,597	81,193
50 - 90 years since fire (15-30)	60,895	121,790
> 90 years since fire (25-55)	101,492	223,282

Potential target (burnable) area (ha)		
Kechika	**LU area (ha)**	**Burnable area (ha)**
	333,426	320,954
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	32,095
2 - 10 years since fire (5-15)	16,048	48,143
10 - 25 years since fire (10-20)	32,095	64,191
25 - 50 years since fire (10-20)	32,095	64,191
50 - 90 years since fire (15-30)	48,143	96,286
> 90 years since fire (25-55)	80,239	176,525

Potential target (burnable) area (ha)		
Kinuseo	**LU area (ha)**	**Burnable area (ha)**
	135,693	90,936
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	9,094
2 - 10 years since fire (5-15)	4,547	13,640
10 - 25 years since fire (10-20)	9,094	18,187
25 - 50 years since fire (10-20)	9,094	18,187
50 - 90 years since fire (15-30)	13,640	27,281
> 90 years since fire (25-55)	22,734	50,015

Potential target (burnable) area (ha)		
Kiskatinaw	**LU area (ha)**	**Burnable area (ha)**
	239,972	226,555
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	22,656
2 - 10 years since fire (5-15)	11,328	33,983
10 - 25 years since fire (10-20)	22,656	45,311
25 - 50 years since fire (10-20)	22,656	45,311
50 - 90 years since fire (15-30)	33,983	67,967
> 90 years since fire (25-55)	56,639	124,605

Potential target (burnable) area (ha)		
Kiwigana	**LU area (ha)**	**Burnable area (ha)**
	443,334	220,270
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	22,027
2 - 10 years since fire (5-15)	11,013	33,040
10 - 25 years since fire (10-20)	22,027	44,054
25 - 50 years since fire (10-20)	22,027	44,054
50 - 90 years since fire (15-30)	33,040	66,081
> 90 years since fire (25-55)	55,067	121,148

Potential target (burnable) area (ha)		
Kledo	**LU area (ha)**	**Burnable area (ha)**
	253,385	247,997
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	24,800
2 - 10 years since fire (5-15)	12,400	37,200
10 - 25 years since fire (10-20)	24,800	49,599
25 - 50 years since fire (10-20)	24,800	49,599
50 - 90 years since fire (15-30)	37,200	74,399
> 90 years since fire (25-55)	61,999	136,398

Potential target (burnable) area (ha)		
Klowee	**LU area (ha)**	**Burnable area (ha)**
	194,691	148,532
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	14,853
2 - 10 years since fire (5-15)	7,427	22,280
10 - 25 years since fire (10-20)	14,853	29,706
25 - 50 years since fire (10-20)	14,853	29,706
50 - 90 years since fire (15-30)	22,280	44,560
> 90 years since fire (25-55)	37,133	81,692

Potential target (burnable) area (ha)		
Klua	**LU area (ha)**	**Burnable area (ha)**
	460,601	321,246
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	32,125
2 - 10 years since fire (5-15)	16,062	48,187
10 - 25 years since fire (10-20)	32,125	64,249
25 - 50 years since fire (10-20)	32,125	64,249
50 - 90 years since fire (15-30)	48,187	96,374
> 90 years since fire (25-55)	80,311	176,685

Potential target (burnable) area (ha)		
Kobes	**LU area (ha)**	**Burnable area (ha)**
	159,858	126,487
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	12,649
2 - 10 years since fire (5-15)	6,324	18,973
10 - 25 years since fire (10-20)	12,649	25,297
25 - 50 years since fire (10-20)	12,649	25,297
50 - 90 years since fire (15-30)	18,973	37,946
> 90 years since fire (25-55)	31,622	69,568

Potential target (burnable) area (ha)		
Kotcho	**LU area (ha)**	**Burnable area (ha)**
	901,040	605,785
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	60,579
2 - 10 years since fire (5-15)	30,289	90,868
10 - 25 years since fire (10-20)	60,579	121,157
25 - 50 years since fire (10-20)	60,579	121,157
50 - 90 years since fire (15-30)	90,868	181,736
> 90 years since fire (25-55)	151,446	333,182

Potential target (burnable) area (ha)		
Lake	**LU area (ha)**	**Burnable area (ha)**
	30,168	195
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	19
2 - 10 years since fire (5-15)	10	29
10 - 25 years since fire (10-20)	19	39
25 - 50 years since fire (10-20)	19	39
50 - 90 years since fire (15-30)	29	58
> 90 years since fire (25-55)	49	107

Potential target (burnable) area (ha)		
Liard River	**LU area (ha)**	**Burnable area (ha)**
	90,611	78,802
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	7,880
2 - 10 years since fire (5-15)	3,940	11,820
10 - 25 years since fire (10-20)	7,880	15,760
25 - 50 years since fire (10-20)	7,880	15,760
50 - 90 years since fire (15-30)	11,820	23,641
> 90 years since fire (25-55)	19,701	43,341

Potential target (burnable) area (ha)		
Liard River Corridor Park	**LU area (ha)**	**Burnable area (ha)**
	90,111	83,693
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	8,369
2 - 10 years since fire (5-15)	4,185	12,554
10 - 25 years since fire (10-20)	8,369	16,739
25 - 50 years since fire (10-20)	8,369	16,739
50 - 90 years since fire (15-30)	12,554	25,108
> 90 years since fire (25-55)	20,923	46,031

Potential target (burnable) area (ha)		
Lower Beatton	**LU area (ha)**	**Burnable area (ha)**
	498,457	448,476
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	44,848
2 - 10 years since fire (5-15)	22,424	67,271
10 - 25 years since fire (10-20)	44,848	89,695
25 - 50 years since fire (10-20)	44,848	89,695
50 - 90 years since fire (15-30)	67,271	134,543
> 90 years since fire (25-55)	112,119	246,662
Potential target (burnable) area (ha)		
Lower Moberly	**LU area (ha)**	**Burnable area (ha)**
	98,304	78,283
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	7,828
2 - 10 years since fire (5-15)	3,914	11,742
10 - 25 years since fire (10-20)	7,828	15,657
25 - 50 years since fire (10-20)	7,828	15,657
50 - 90 years since fire (15-30)	11,742	23,485
> 90 years since fire (25-55)	19,571	43,056
Potential target (burnable) area (ha)		
Major Hart	**LU area (ha)**	**Burnable area (ha)**
	267,228	151,463
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	15,146
2 - 10 years since fire (5-15)	7,573	22,719
10 - 25 years since fire (10-20)	15,146	30,293
25 - 50 years since fire (10-20)	15,146	30,293
50 - 90 years since fire (15-30)	22,719	45,439
> 90 years since fire (25-55)	37,866	83,305
Potential target (burnable) area (ha)		
Martin Creek	**LU area (ha)**	**Burnable area (ha)**
	64,575	54,947
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	5,495
2 - 10 years since fire (5-15)	2,747	8,242
10 - 25 years since fire (10-20)	5,495	10,989
25 - 50 years since fire (10-20)	5,495	10,989
50 - 90 years since fire (15-30)	8,242	16,484
> 90 years since fire (25-55)	13,737	30,221
Potential target (burnable) area (ha)		
Milligan	**LU area (ha)**	**Burnable area (ha)**
	473,968	63,098
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	6,310
2 - 10 years since fire (5-15)	3,155	9,465
10 - 25 years since fire (10-20)	6,310	12,620
25 - 50 years since fire (10-20)	6,310	12,620
50 - 90 years since fire (15-30)	9,465	18,930
> 90 years since fire (25-55)	15,775	34,704

Potential target (burnable) area (ha)		
Muncho	**LU area (ha)**	**Burnable area (ha)**
	239,702	106,035
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	10,604
2 - 10 years since fire (5-15)	5,302	15,905
10 - 25 years since fire (10-20)	10,604	21,207
25 - 50 years since fire (10-20)	10,604	21,207
50 - 90 years since fire (15-30)	15,905	31,811
> 90 years since fire (25-55)	26,509	58,319
Potential target (burnable) area (ha)		
Nabesche	**LU area (ha)**	**Burnable area (ha)**
	91,342	80,224
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	8,022
2 - 10 years since fire (5-15)	4,011	12,034
10 - 25 years since fire (10-20)	8,022	16,045
25 - 50 years since fire (10-20)	8,022	16,045
50 - 90 years since fire (15-30)	12,034	24,067
> 90 years since fire (25-55)	20,056	44,123
Potential target (burnable) area (ha)		
Narraway	**LU area (ha)**	**Burnable area (ha)**
	78,742	71,834
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	7,183
2 - 10 years since fire (5-15)	3,592	10,775
10 - 25 years since fire (10-20)	7,183	14,367
25 - 50 years since fire (10-20)	7,183	14,367
50 - 90 years since fire (15-30)	10,775	21,550
> 90 years since fire (25-55)	17,958	39,509
Potential target (burnable) area (ha)		
Nelson Forks	**LU area (ha)**	**Burnable area (ha)**
	117,209	95,103
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	9,510
2 - 10 years since fire (5-15)	4,755	14,265
10 - 25 years since fire (10-20)	9,510	19,021
25 - 50 years since fire (10-20)	9,510	19,021
50 - 90 years since fire (15-30)	14,265	28,531
> 90 years since fire (25-55)	23,776	52,307
Potential target (burnable) area (ha)		
Netson	**LU area (ha)**	**Burnable area (ha)**
	323,324	189,013
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	18,901
2 - 10 years since fire (5-15)	9,451	28,352
10 - 25 years since fire (10-20)	18,901	37,803
25 - 50 years since fire (10-20)	18,901	37,803
50 - 90 years since fire (15-30)	28,352	56,704
> 90 years since fire (25-55)	47,253	103,957

Potential target (burnable) area (ha)		
One Island	**LU area (ha)**	**Burnable area (ha)**
	191,030	158,284
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	15,828
2 - 10 years since fire (5-15)	7,914	23,743
10 - 25 years since fire (10-20)	15,828	31,657
25 - 50 years since fire (10-20)	15,828	31,657
50 - 90 years since fire (15-30)	23,743	47,485
> 90 years since fire (25-55)	39,571	87,056

Potential target (burnable) area (ha)		
Petitot	**LU area (ha)**	**Burnable area (ha)**
	794,819	249,177
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	24,918
2 - 10 years since fire (5-15)	12,459	37,376
10 - 25 years since fire (10-20)	24,918	49,835
25 - 50 years since fire (10-20)	24,918	49,835
50 - 90 years since fire (15-30)	37,376	74,753
> 90 years since fire (25-55)	62,294	137,047

Potential target (burnable) area (ha)		
Pine Pass	**LU area (ha)**	**Burnable area (ha)**
	126,678	91,254
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	9,125
2 - 10 years since fire (5-15)	4,563	13,688
10 - 25 years since fire (10-20)	9,125	18,251
25 - 50 years since fire (10-20)	9,125	18,251
50 - 90 years since fire (15-30)	13,688	27,376
> 90 years since fire (25-55)	22,813	50,190

Potential target (burnable) area (ha)		
Pine River	**LU area (ha)**	**Burnable area (ha)**
	93,082	72,272
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	7,227
2 - 10 years since fire (5-15)	3,614	10,841
10 - 25 years since fire (10-20)	7,227	14,454
25 - 50 years since fire (10-20)	7,227	14,454
50 - 90 years since fire (15-30)	10,841	21,681
> 90 years since fire (25-55)	18,068	39,749

Potential target (burnable) area (ha)		
Prophet	**LU area (ha)**	**Burnable area (ha)**
	162,973	82,405
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	8,241
2 - 10 years since fire (5-15)	4,120	12,361
10 - 25 years since fire (10-20)	8,241	16,481
25 - 50 years since fire (10-20)	8,241	16,481
50 - 90 years since fire (15-30)	12,361	24,722
> 90 years since fire (25-55)	20,601	45,323

Potential target (burnable) area (ha)		
Puggins	**LU area (ha)**	**Burnable area (ha)**
	141,582	113,741
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	11,374
2 - 10 years since fire (5-15)	5,687	17,061
10 - 25 years since fire (10-20)	11,374	22,748
25 - 50 years since fire (10-20)	11,374	22,748
50 - 90 years since fire (15-30)	17,061	34,122
> 90 years since fire (25-55)	28,435	62,557
Potential target (burnable) area (ha)		
Rabbit	**LU area (ha)**	**Burnable area (ha)**
	288,789	280,745
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	28,074
2 - 10 years since fire (5-15)	14,037	42,112
10 - 25 years since fire (10-20)	28,074	56,149
25 - 50 years since fire (10-20)	28,074	56,149
50 - 90 years since fire (15-30)	42,112	84,223
> 90 years since fire (25-55)	70,186	154,410
Potential target (burnable) area (ha)		
Redwillow	**LU area (ha)**	**Burnable area (ha)**
	109,000	102,682
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	10,268
2 - 10 years since fire (5-15)	5,134	15,402
10 - 25 years since fire (10-20)	10,268	20,536
25 - 50 years since fire (10-20)	10,268	20,536
50 - 90 years since fire (15-30)	15,402	30,805
> 90 years since fire (25-55)	25,671	56,475
Potential target (burnable) area (ha)		
Sandy	**LU area (ha)**	**Burnable area (ha)**
	291,723	144,418
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	14,442
2 - 10 years since fire (5-15)	7,221	21,663
10 - 25 years since fire (10-20)	14,442	28,884
25 - 50 years since fire (10-20)	14,442	28,884
50 - 90 years since fire (15-30)	21,663	43,325
> 90 years since fire (25-55)	36,105	79,430
Potential target (burnable) area (ha)		
Schooler	**LU area (ha)**	**Burnable area (ha)**
	65,890	44,698
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	4,470
2 - 10 years since fire (5-15)	2,235	6,705
10 - 25 years since fire (10-20)	4,470	8,940
25 - 50 years since fire (10-20)	4,470	8,940
50 - 90 years since fire (15-30)	6,705	13,409
> 90 years since fire (25-55)	11,174	24,584

Potential target (burnable) area (ha)		
Selwyn	**LU area (ha)**	**Burnable area (ha)**
	44,556	24,232
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	2,423
2 - 10 years since fire (5-15)	1,212	3,635
10 - 25 years since fire (10-20)	2,423	4,846
25 - 50 years since fire (10-20)	2,423	4,846
50 - 90 years since fire (15-30)	3,635	7,270
> 90 years since fire (25-55)	6,058	13,328
Potential target (burnable) area (ha)		
Septimus	**LU area (ha)**	**Burnable area (ha)**
	67,325	54,084
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	5,408
2 - 10 years since fire (5-15)	2,704	8,113
10 - 25 years since fire (10-20)	5,408	10,817
25 - 50 years since fire (10-20)	5,408	10,817
50 - 90 years since fire (15-30)	8,113	16,225
> 90 years since fire (25-55)	13,521	29,746
Potential target (burnable) area (ha)		
Sharktooth	**LU area (ha)**	**Burnable area (ha)**
	198,220	55,506
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	5,551
2 - 10 years since fire (5-15)	2,775	8,326
10 - 25 years since fire (10-20)	5,551	11,101
25 - 50 years since fire (10-20)	5,551	11,101
50 - 90 years since fire (15-30)	8,326	16,652
> 90 years since fire (25-55)	13,877	30,528
Potential target (burnable) area (ha)		
Shekilie	**LU area (ha)**	**Burnable area (ha)**
	401,267	376,365
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	37,637
2 - 10 years since fire (5-15)	18,818	56,455
10 - 25 years since fire (10-20)	37,637	75,273
25 - 50 years since fire (10-20)	37,637	75,273
50 - 90 years since fire (15-30)	56,455	112,910
> 90 years since fire (25-55)	94,091	207,001
Potential target (burnable) area (ha)		
Sikanni	**LU area (ha)**	**Burnable area (ha)**
	310,408	267,510
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	26,751
2 - 10 years since fire (5-15)	13,375	40,126
10 - 25 years since fire (10-20)	26,751	53,502
25 - 50 years since fire (10-20)	26,751	53,502
50 - 90 years since fire (15-30)	40,126	80,253
> 90 years since fire (25-55)	66,877	147,130

Potential target (burnable) area (ha)		
Smith	**LU area (ha)**	**Burnable area (ha)**
	269,755	240,332
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	24,033
2 - 10 years since fire (5-15)	12,017	36,050
10 - 25 years since fire (10-20)	24,033	48,066
25 - 50 years since fire (10-20)	24,033	48,066
50 - 90 years since fire (15-30)	36,050	72,100
> 90 years since fire (25-55)	60,083	132,183

Potential target (burnable) area (ha)		
Sulphur 8 Mile	**LU area (ha)**	**Burnable area (ha)**
	438,594	326,044
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	32,604
2 - 10 years since fire (5-15)	16,302	48,907
10 - 25 years since fire (10-20)	32,604	65,209
25 - 50 years since fire (10-20)	32,604	65,209
50 - 90 years since fire (15-30)	48,907	97,813
> 90 years since fire (25-55)	81,511	179,324

Potential target (burnable) area (ha)		
Tommy Lakes	**LU area (ha)**	**Burnable area (ha)**
	705,675	568,624
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	56,862
2 - 10 years since fire (5-15)	28,431	85,294
10 - 25 years since fire (10-20)	56,862	113,725
25 - 50 years since fire (10-20)	56,862	113,725
50 - 90 years since fire (15-30)	85,294	170,587
> 90 years since fire (25-55)	142,156	312,743

Potential target (burnable) area (ha)		
Trutch	**LU area (ha)**	**Burnable area (ha)**
	436,724	410,853
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	41,085
2 - 10 years since fire (5-15)	20,543	61,628
10 - 25 years since fire (10-20)	41,085	82,171
25 - 50 years since fire (10-20)	41,085	82,171
50 - 90 years since fire (15-30)	61,628	123,256
> 90 years since fire (25-55)	102,713	225,969

Potential target (burnable) area (ha)		
Tuchodi	**LU area (ha)**	**Burnable area (ha)**
	391,890	200,858
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	20,086
2 - 10 years since fire (5-15)	10,043	30,129
10 - 25 years since fire (10-20)	20,086	40,172
25 - 50 years since fire (10-20)	20,086	40,172
50 - 90 years since fire (15-30)	30,129	60,257
> 90 years since fire (25-55)	50,215	110,472

Potential target (burnable) area (ha)		
Upper Moberly	**LU area (ha)**	**Burnable area (ha)**
	116,973	79,586
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	7,959
2 - 10 years since fire (5-15)	3,979	11,938
10 - 25 years since fire (10-20)	7,959	15,917
25 - 50 years since fire (10-20)	7,959	15,917
50 - 90 years since fire (15-30)	11,938	23,876
> 90 years since fire (25-55)	19,897	43,772
Potential target (burnable) area (ha)		
Upper Sukunka	**LU area (ha)**	**Burnable area (ha)**
	87,232	72,949
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	7,295
2 - 10 years since fire (5-15)	3,647	10,942
10 - 25 years since fire (10-20)	7,295	14,590
25 - 50 years since fire (10-20)	7,295	14,590
50 - 90 years since fire (15-30)	10,942	21,885
> 90 years since fire (25-55)	18,237	40,122
Potential target (burnable) area (ha)		
Wapiti	**LU area (ha)**	**Burnable area (ha)**
	94,809	88,708
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	8,871
2 - 10 years since fire (5-15)	4,435	13,306
10 - 25 years since fire (10-20)	8,871	17,742
25 - 50 years since fire (10-20)	8,871	17,742
50 - 90 years since fire (15-30)	13,306	26,612
> 90 years since fire (25-55)	22,177	48,789
Potential target (burnable) area (ha)		
Wicked River	**LU area (ha)**	**Burnable area (ha)**
	17,899	16,328
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	1,633
2 - 10 years since fire (5-15)	816	2,449
10 - 25 years since fire (10-20)	1,633	3,266
25 - 50 years since fire (10-20)	1,633	3,266
50 - 90 years since fire (15-30)	2,449	4,898
> 90 years since fire (25-55)	4,082	8,980
Potential target (burnable) area (ha)		
Wolverine	**LU area (ha)**	**Burnable area (ha)**
	94,163	18,237
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	1,824
2 - 10 years since fire (5-15)	912	2,736
10 - 25 years since fire (10-20)	1,824	3,647
25 - 50 years since fire (10-20)	1,824	3,647
50 - 90 years since fire (15-30)	2,736	5,471
> 90 years since fire (25-55)	4,559	10,030

Others have suggested different structural organization for managing time since fire across the landscape. DeLong (2007, 2009, 2014) conducted analyses and determined the range of natural variability at a landscape unit or natural disturbance unit level. These units delineate the landscape based on topography and ecosystem characteristics; the natural range of variability provides the minimum and maximum disturbance thresholds that would allow the ecosystems to maintain all age and structural classes for long-term ecosystem resiliency. DeLong only included the Spruce-Willow-Birch biogeoclimatic zone in the analysis and recommends a time since fire distribution of 0.2 to 0.3% in 0 to 1 year since fire or 1 to 1.4% in 0 to 5 years since fire.

Landscape Unit	Historical Burn Area (ha)	Total Landscape Unit Area (ha)	Suggested annual fire average (ha)	Suggested 5-year fire average (ha)
Sulpher/8 Mile	22,999	236,107	602	3,010
Tuchodi	25,510	200,042	390	1,950
Gatho	13,120	164,152	476	2,380
Prophet	12,638	116,272	270	1,350

Figure 16 DeLong (2009) reviewed three Landscape Units (LU) and provided recommendations for an annual fire average between 270ha – 602ha in the Spruce-Willow-Birch zone only of each LU.

Operational Fire Matrix

The P-LFM is centered on adaptive management in flexibility, ranges of targeted fire across the landscape to support multiple values and meet multiple objectives. The goal of the program is ensure that there is varying time since fire across the landscape which is also translated into areas where there are no fire across the landscape. While implementation of the P-LFM may initially include implementing prescribed fire on a yearly basis, it is also a way to advantageously and strategically work with and incorporate wildland fire. Most prescribed fire will occur in the spring and fall of each year when and where practicable and will occur during the summer months in collaboration with wildland fire strategies and operations. It is also possible that the desired disturbance resulting from prescribed fire may also be achieved in combination with forestry activities such as harvesting and/or with other industrial activities including oil and gas development and restoration, however, these disturbances are static rather than dynamically shifting across the landscape.

Region 7B	**R7B area (ha)**	**Burnable area (ha)**
	19,116,924	12,784,606
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	1,181,414

Figure 17 The burnable area within Region 7B is almost 13 million hectares. In order to distribute recent fire (within two years) across the landscape in a percent range of 0 to 10% of the burnable landscape, 0 to 1.2 million hectares needs to be burned. Maximum target area was calculated by subtracting 10% of the burnable landscape (1,278,461ha) from the current fire area of 0 – 2 years since fire (97, 046ha).

Based on targeting 0 – 10% of the burnable area in the 0 to 2 years since fire category 0 to 1.2 million hectares across the Region would need to be burned over or within a 24 month period. Given the percentages that have been hypothesized in each time-since-fire class, there would be a shift as each year passes. If the desired range of minimal time since fire (0–2 years) is 0 to 10 % of the burnable area, 0 to 1.2 million ha of the Region would need to be burned by wildfire or prescribed fire, or a combination of both, annually until the targeted area of time since fire was reached. Within the NDUs

of the Region that have larger areas burned, most of the fire occurred more than 50 to 90 years ago. In order to have a certain percentage of the land in more than 25 years since fire, in 25 years' time, there needs to be more area burned over the next current decade. Results show, however, that there has been a downward trend in prescribed fires over the past 30 years, with a maximum recorded historical size of only 6100 ha (Leverkus 2015). It is acknowledged that the data set has limitations due to remoteness and the complexity of recording fire across the region.

Potential target matrices have been developed for the NDUs and LUs across the Region as follows in the proceeding figures:

Boreal Foothills	**NDU area (ha)**	**Burnable area (ha)**
	1,183,662	693,744
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	69,272
Boreal Plains	**NDU area (ha)**	**Burnable area (ha)**
	9,758,440	6,545,396
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	558,721
Northern Boreal Mountains	**NDU area (ha)**	**Burnable area (ha)**
	6,882,890	4,652,663
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	464,842
Omineca	**NDU area (ha)**	**Burnable area (ha)**
	325,919	269,952
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	26,912
Wet Mountain	**NDU area (ha)**	**Burnable area (ha)**
	574,335	409,603
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	40,660

Figure 18 The burnable area within the Natural Disturbance Units (NDUs) in Region 7B is approximately 12.6 million hectares. In order to distribute recent fire (within two years) across the landscape in a range of 0 to 10% of the burnable landscape, 0 to 560,000 hectares would need to be burned across the NDUs exclusive of the Wet Trench NDU.

Bearhole	**LU area (ha)**	**Burnable area (ha)**
	115,298	88,660
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	8,866
Beaver	**LU area (ha)**	**Burnable area (ha)**
	184,342	181,756
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	18,176
Belcourt	**LU area (ha)**	**Burnable area (ha)**
	110,990	75,228
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	7,523
Blueberry	**LU area (ha)**	**Burnable area (ha)**
	731,433	642,403
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	56,401
Boreal	**LU area (ha)**	**Burnable area (ha)**
	218,506	121,283
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	12,128
Boucher	**LU area (ha)**	**Burnable area (ha)**
	39,332	23,711
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	2,302
Braid	**LU area (ha)**	**Burnable area (ha)**
	131,898	61,820
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	6,182
Burnt – Lemoray	**LU area (ha)**	**Burnable area (ha)**
	129,189	91,247
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	9,066
Carbon	**LU area (ha)**	**Burnable area (ha)**
	95,617	60,890
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	6,089
Chukachida River	**LU area (ha)**	**Burnable area (ha)**
	307	25
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	3
Churchill	**LU area (ha)**	**Burnable area (ha)**
	453,911	94,713
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	9,442
Clarke	**LU area (ha)**	**Burnable area (ha)**
	411,588	156,705
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	15,652

Clearwater	**LU area (ha)**	**Burnable area (ha)**
	109,210	58,226
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	5,815
Cridland	**LU area (ha)**	**Burnable area (ha)**
	263,311	163,155
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	16,315
Crying Girl	**LU area (ha)**	**Burnable area (ha)**
	67,344	22,787
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	2,279
Dawson Creek	**LU area (ha)**	**Burnable area (ha)**
	157,194	134,965
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	13,433
Dease-Liard	**LU area (ha)**	**Burnable area (ha)**
	327,723	161,892
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	16,189
Dunlevy	**LU area (ha)**	**Burnable area (ha)**
	49,910	33,761
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	3,376
East Pine	**LU area (ha)**	**Burnable area (ha)**
	22,682	18,016
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	1,675
Frog	**LU area (ha)**	**Burnable area (ha)**
	261,904	83,179
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	8,318
Frog-Gataga	**LU area (ha)**	**Burnable area (ha)**
	345,615	195,857
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	19,586
Gathto	**LU area (ha)**	**Burnable area (ha)**
	392,743	224,431
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	22,443
Gething	**LU area (ha)**	**Burnable area (ha)**
	62,030	47,614
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	4,761
Graham	**LU area (ha)**	**Burnable area (ha)**
	334,189	262,056
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	26,206
Gwillim	**LU area (ha)**	**Burnable area (ha)**
	138,070	71,251
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	7,119

Halfway	LU area (ha)	Burnable area (ha)
	206,437	172,275
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	17,228
Highhat	LU area (ha)	Burnable area (ha)
	93,009	72,937
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	7,294
Holden	LU area (ha)	Burnable area (ha)
	241,358	238,537
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	23,854
Hudson's Hope	LU area (ha)	Burnable area (ha)
	92,768	1,930
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	0
Hyland	LU area (ha)	Burnable area (ha)
	494,959	445,056
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	44,506
Imperial - Monkman	LU area (ha)	Burnable area (ha)
	121,905	109,092
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	10,678
Irene	LU area (ha)	Burnable area (ha)
	235,983	226,392
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	22,631
Kahntah	LU area (ha)	Burnable area (ha)
	749,247	405,967
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	40,566
Kechika	LU area (ha)	Burnable area (ha)
	333,426	320,954
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	31,896
Kinuseo	LU area (ha)	Burnable area (ha)
	135,693	90,936
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	9,094
Kiskatinaw	LU area (ha)	Burnable area (ha)
	239,972	226,555
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	21,192
Kiwigana	LU area (ha)	Burnable area (ha)
	443,334	220,270
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	21,980

Kledo	**LU area (ha)**	**Burnable area (ha)**
	253,385	247,997
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	24,800
Klowee	**LU area (ha)**	**Burnable area (ha)**
	194,691	148,532
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	14,851
Klua	**LU area (ha)**	**Burnable area (ha)**
	460,601	321,246
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	32,117
Kobes	**LU area (ha)**	**Burnable area (ha)**
	159,858	126,487
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	7,067
Kotcho	**LU area (ha)**	**Burnable area (ha)**
	901,040	605,785
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	60,309
Lake	**LU area (ha)**	**Burnable area (ha)**
	30,168	195
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	0
Liard River	**LU area (ha)**	**Burnable area (ha)**
	90,611	78,802
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	7,880
Liard River Corridor Park	**LU area (ha)**	**Burnable area (ha)**
	90,111	83,693
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	8,369
Lower Beatton	**LU area (ha)**	**Burnable area (ha)**
	498,457	448,476
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	8,877
Lower Moberly	**LU area (ha)**	**Burnable area (ha)**
	98,304	78,283
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	7,766
Major Hart	**LU area (ha)**	**Burnable area (ha)**
	267,228	151,463
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	15,146
Martin Creek	**LU area (ha)**	**Burnable area (ha)**
	64,575	54,947
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	5,486
Milligan	**LU area (ha)**	**Burnable area (ha)**
	473,968	63,098
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	0

Muncho	**LU area (ha)**	**Burnable area (ha)**
	239,702	106,035
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	10,604
Nabesche	**LU area (ha)**	**Burnable area (ha)**
	91,342	80,224
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	8,022
Narraway	**LU area (ha)**	**Burnable area (ha)**
	78,742	71,834
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	7,183
Nelson Forks	**LU area (ha)**	**Burnable area (ha)**
	117,209	95,103
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	9,510
Area to target with rx fire		
Netson	**LU area (ha)**	**Burnable area (ha)**
	323,324	189,013
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	18,901
Area to target with rx fire		
One Island	**LU area (ha)**	**Burnable area (ha)**
	191,030	158,284
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	15,791
Petitot	**LU area (ha)**	**Burnable area (ha)**
	794,819	249,177
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	19,311
Pine Pass	**LU area (ha)**	**Burnable area (ha)**
	126,678	91,254
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	9,125
Pine River	**LU area (ha)**	**Burnable area (ha)**
	93,082	72,272
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	6,254
Prophet	**LU area (ha)**	**Burnable area (ha)**
	162,973	82,405
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	8,067
Puggins	**LU area (ha)**	**Burnable area (ha)**
	141,582	113,741
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	10,837
Rabbit	**LU area (ha)**	**Burnable area (ha)**
	288,789	280,745
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	28,074

Redwillow	**LU area (ha)**	**Burnable area (ha)**
	109,000	102,682
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	10,268
Sandy	**LU area (ha)**	**Burnable area (ha)**
	291,723	144,418
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	14,433
Schooler	**LU area (ha)**	**Burnable area (ha)**
	65,890	44,698
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	4,470
Selwyn	**LU area (ha)**	**Burnable area (ha)**
	44,556	24,232
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	2,290
Septimus	**LU area (ha)**	**Burnable area (ha)**
	67,325	54,084
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	5,408
Sharktooth	**LU area (ha)**	**Burnable area (ha)**
	198,220	55,506
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	5,551
Shekilie	**LU area (ha)**	**Burnable area (ha)**
	401,267	376,365
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	37,627
Sikanni	**LU area (ha)**	**Burnable area (ha)**
	310,408	267,510
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	26,751
Smith	**LU area (ha)**	**Burnable area (ha)**
	269,755	240,332
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	24,032
Sulphur 8 Mile	**LU area (ha)**	**Burnable area (ha)**
	438,594	326,044
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	32,593
Tommy Lakes	**LU area (ha)**	**Burnable area (ha)**
	705,675	568,624
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	56,858
Trutch	**LU area (ha)**	**Burnable area (ha)**
	436,724	410,853
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	41,080

Tuchodi	LU area (ha)	Burnable area (ha)
	391,890	200,858
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	20,086
Upper Moberly	**LU area (ha)**	**Burnable area (ha)**
	116,973	79,586
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	7,959
Upper Sukunka	**LU area (ha)**	**Burnable area (ha)**
	87,232	72,949
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	7,293
Wapiti	**LU area (ha)**	**Burnable area (ha)**
	94,809	88,708
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	8,871
Wicked River	**LU area (ha)**	**Burnable area (ha)**
	17,899	16,328
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	1,623
Wolverine	**LU area (ha)**	**Burnable area (ha)**
	94,163	18,237
Fire distribution (% of burnable area)	**Area (ha) min**	**Area (ha) max**
0 - 2 years since fire (0-10)	0	1,824

Figure 19 The burnable area within the Landscape Units (LUs) in Region 7B.

Next Steps and Considerations

The next step now that these matrices have been developed is to compare them to the dataset of proposed spatial distribution of prescribed fire which was gathered through engagement with First Nation, Indigenous communities, guide outfitters, range tenure holders and other interested parties. Refinement and implementation of the P-LFM also requires discussion, feedback, and recommendations by Indigenous communities, stakeholders, Governments, and other interested parties as to the desired stocking rate, grazing capacity, allocated animal units and distribution of non-burnable/burnable areas. These are critical considerations for determining the spatio-temporal distribution of fire across the landscape because humans have played an important role in creating heterogeneity through fire in selected locations. In addition, time since fire matrices can be developed over other scales such as watersheds, guide outfitting territories, range tenures, Parks and Protected Areas, and other features which have a perimeter boundary.

It may or may not be appropriate to implement the potential target range of 0-10% within 0-2 years since a fire across each LU. Depending on other landscape and cultural values across each LU, these ranges could be shifted or changed to reflect the requirements for more or less recent time since fire. If there will be harvesting or other landscape disturbances which could result in similar heterogeneity (differences in vegetation height, composition, and distribution) over a given area such as the LUs, the potential target matrices could be altered. Historically, south facing slopes in the Region have the highest percentage of prescribed fire on average when compared to other aspects (Leverkus 2015). In order to maintain heterogeneity and biological diversity as well as to promote resources for selection by wildlife and to limit fire across the landscape, there is a need to target areas to maintain resilience and

ecosystem function, recognizing that fire itself is a process across the landscape which promotes fire absorbency.

Three additional consideration to be further discussed, refined, and adapted to within the P-LFM: 1) inclusion of boreal caribou cores in the "non-burnable" foundation, 2) inclusion of high elevation winter range, and 3) increase in fuel availability and receptiveness in a changing climate. By identifying boreal caribou cores in the "non-burnable" layer, we have simply removed that area from a planned strategic prescribed fire operation in the context of the Peace-Liard Prescribed Fire Program. This means that no effort to conduct a prescribed fire in those locations will be made, however, fire has occurred historically within these core areas. Across the Region, the caribou cores account for 2.6 million hectares of which the majority could be comprised of fuel receptive to fire throughout the year, especially with the fire season lengthening. Since these areas have been removed from this plan and considered as "non-burnable", should they end up burning by a wildfire event, that is outside the scope and planning of the current P-LFM. We recommend that special consideration be given to these core areas as perhaps they would be better suited as areas of special protection and while not included for targeted prescribed fires, they may be included in the matrices for their interaction with wildfires as demonstrated in Figure 20. Similarly, high elevation winter range was included in the non-burnable area accounting for almost 450, 000ha across the Region.

If the ultimate goal is for the P-LFM to be adaptive management with a focus on resilience, we can not only develop management plans in a stable environment. While we currently call the foundational layer "non-burnable", meaning area that is not currently available as fuel (rock, snow, ice, bare ground, road surface) or area that fire is desired to be absent from (communities with a 2km buffer, ski areas, caribou cores), we must ask ourselves: what would we tolerate as realistically it could all burn. It is possible that without intervention, 100% of the caribou core areas could burn. Perhaps a more realistic goal would be to keep less than 10% of the caribou cores in recent time since fire classes with preferably 0% to meet the 65% undisturbed targets outlined by the federal government. Clearly these would be areas that we would want to ensure a level of fire absorbency on their perimeters so that in a wildfire event, there is a level of protection and resilience developed around these caribou core areas. Additionally, should it be determined that such extreme efforts are necessary, similar FireSmart and fuel reduction programs could take place around the boreal caribou cores in order to minimize the potential spread of fire throughout them. It would appear that an option for the 2.6 million hectares of boreal caribou core in the Region is to have some tolerance of fire within the cores with a preference that none of them burn.

It is important to understand and recognize that the analyses associated with the first approximation of the P-L Fire Matrices are founded on vegetation and fire data currently available. While all efforts were made to access the most recent data, it is possible that there have already been changes associated with snow and ice retreating in the higher elevation areas of the Region exposing vegetation which could become fuel. Therefore, as current vegetation and fuel data become available, it is possible to re-run the analysis to gather an accurate burnable area in a changing climate. It is anticipated that the "non-burnable" areas may decrease in light of this. Furthermore, other data that was identified as "non-burnable" including forest tenures and cutblocks and recreation areas, could indeed be receptive to fire. Additionally, while we buffered communities by 2km as per the general FireSmart guidelines, the vegetation in these buffered areas and the communities themselves could also be receptive to fire at a given time in given indices such as the events in the Peace and Fort McMurray in 2016 and throughout British Columbia in 2017. Further discussions need to occur around the strategies to protect or conserve these areas identified as non-burnable – desired not to be burned and/or lacking receptive fuels to carry a fire.

Calendar		Core area (ha)	
		430,933	
Class	Distribution	Fire area (ha)	Fire area (%)
1	0 - 2 years since fire	4,852	1.13%
2	2 - 10 years since fire	40,095	9.30%
3	10 - 25 years since fire	32,567	7.56%
4	25 - 50 years since fire	7,164	1.66%
5	50 - 90 years since fire	5,073	1.18%
6	> 90 years since fire	341,182	79.17%
Capot-Blanc		Core area (ha)	
		87,636	
Class	Distribution	Fire area (ha)	Fire area (%)
1	0 - 2 years since fire	0	0.00%
2	2 - 10 years since fire	2,142	2.44%
3	10 - 25 years since fire	0	0.00%
4	25 - 50 years since fire	30	0.03%
5	50 - 90 years since fire	85,464	97.52%
6	> 90 years since fire	-	-
Chinchaga North		Core area (ha)	
		219,880	
Class	Distribution	Fire area (ha)	Fire area (%)
1	0 - 2 years since fire	17	0.01%
2	2 - 10 years since fire	342	0.16%
3	10 - 25 years since fire	649	0.30%
4	25 - 50 years since fire	2,338	1.06%
5	50 - 90 years since fire	3,953	1.80%
6	> 90 years since fire	212,581	96.68%
Clarke		Core area (ha)	
		234,031	
Class	Distribution	Fire area (ha)	Fire area (%)
1	0 - 2 years since fire	36	0.02%
2	2 - 10 years since fire	410	0.18%
3	10 - 25 years since fire	237	0.10%
4	25 - 50 years since fire	17,278	7.38%
5	50 - 90 years since fire	40,476	17.30%
6	> 90 years since fire	175,593	75.03%
Etthithun		Core area (ha)	
		119,532	
Class	Distribution	Fire area (ha)	Fire area (%)
1	0 - 2 years since fire	0	0.00%
2	2 - 10 years since fire	13,637	11.41%
3	10 - 25 years since fire	65	0.05%
4	25 - 50 years since fire	5,184	4.34%
5	50 - 90 years since fire	100,645	84.20%
6	> 90 years since fire	-	-
Fort Nelson		Core area (ha)	
		53,791	
Class	Distribution	Fire area (ha)	Fire area (%)
1	0 - 2 years since fire	0	0.00%
2	2 - 10 years since fire	0	0.00%
3	10 - 25 years since fire	0	0.00%
4	25 - 50 years since fire	3,330	6.19%
5	50 - 90 years since fire	33,480	62.24%
6	> 90 years since fire	16,981	31.57%
Fortune		Core area (ha)	
		230,134	
Class	Distribution	Fire area (ha)	Fire area (%)
1	0 - 2 years since fire	0	0.00%
2	2 - 10 years since fire	39	0.02%
3	10 - 25 years since fire	17	0.01%
4	25 - 50 years since fire	0	0.00%
5	50 - 90 years since fire	1,034	0.45%
6	> 90 years since fire	229,045	99.53%

Kiwigana		Core area (ha)	
		130,179	
Class	Distribution	Fire area (ha)	Fire area (%)
1	0 - 2 years since fire	44	0.03%
2	2 - 10 years since fire	1,077	0.83%
3	10 - 25 years since fire	2,787	2.14%
4	25 - 50 years since fire	0	0.00%
5	50 - 90 years since fire	2,306	1.77%
6	> 90 years since fire	123,964	95.23%
Kotcho		Core area (ha)	
		179,581	
Class	Distribution	Fire area (ha)	Fire area (%)
1	0 - 2 years since fire	29	0.02%
2	2 - 10 years since fire	1,584	0.88%
3	10 - 25 years since fire	11,116	6.19%
4	25 - 50 years since fire	27,719	15.44%
5	50 - 90 years since fire	33,870	18.86%
6	> 90 years since fire	105,263	58.62%
Milligan		Core area (ha)	
		519,769	
Class	Distribution	Fire area (ha)	Fire area (%)
1	0 - 2 years since fire	14,353	2.76%
2	2 - 10 years since fire	11,901	2.29%
3	10 - 25 years since fire	183	0.04%
4	25 - 50 years since fire	6,485	1.25%
5	50 - 90 years since fire	94,829	18.24%
6	> 90 years since fire	392,019	75.42%
Paradise		Core area (ha)	
		40,327	
Class	Distribution	Fire area (ha)	Fire area (%)
1	0 - 2 years since fire	0	0.00%
2	2 - 10 years since fire	1,413	3.50%
3	10 - 25 years since fire	515	1.28%
4	25 - 50 years since fire	976	2.42%
5	50 - 90 years since fire	2,341	5.80%
6	> 90 years since fire	35,083	87.00%
Parker		Core area (ha)	
		75,222	
Class	Distribution	Fire area (ha)	Fire area (%)
1	0 - 2 years since fire	2	0.00%
2	2 - 10 years since fire	1,705	2.27%
3	10 - 25 years since fire	101	0.13%
4	25 - 50 years since fire	722	0.96%
5	50 - 90 years since fire	5,823	7.74%
6	> 90 years since fire	66,871	88.90%
Prophet		Core area (ha)	
		140,371	
Class	Distribution	Fire area (ha)	Fire area (%)
1	0 - 2 years since fire	6	0.00%
2	2 - 10 years since fire	7,648	5.45%
3	10 - 25 years since fire	156	0.11%
4	25 - 50 years since fire	1,005	0.72%
5	50 - 90 years since fire	1,479	1.05%
6	> 90 years since fire	130,076	92.67%
Shush Creek		Core area (ha)	
		38,502	
Class	Distribution	Fire area (ha)	Fire area (%)
1	0 - 2 years since fire	3	0.01%
2	2 - 10 years since fire	31	0.08%
3	10 - 25 years since fire	38,468	99.91%
4	25 - 50 years since fire	-	-
5	50 - 90 years since fire	-	-
6	> 90 years since fire	-	-
Tsea		Core area (ha)	
		68,932	
Class	Distribution	Fire area (ha)	Fire area (%)
1	0 - 2 years since fire	0	0.00%
2	2 - 10 years since fire	33	0.05%
3	10 - 25 years since fire	-	0.00%
4	25 - 50 years since fire	10	0.01%
5	50 - 90 years since fire	68,889	99.94%
6	> 90 years since fire	-	-

Figure 20 Within the boreal caribou cores, there is variable time since fire which should be considered in the context of the P-LFM in light of fuel availability and receptiveness.

OPERATIONAL PLAN

Prescribed Fire Units (PFUs)

Prescribed Fire Units (PFUs) have been identified through the collaborative engagement and strategic plan development process. The PFUs have been spatially documented using ArcGIS10.5 and QGIS. The database will be housed with the Fish and Wildlife Section in Fort St. John and can be shared with the BC Wildfire Service (primarily the Prince George Fire Center; the Dawson Creek, Mackenzie, Fort St. John and Fort Nelson Zones) amongst others. The PFUs should be compared to the discussion in the Fire Management Plans from each Zone. The PFUs can be revised annually with feedback from prescribed fire practitioners. The PFU dataset provides the spatial arrangement for the distribution of desired fire across the Region.

Smoke Management

Adhering to the *Open Burning Smoke Control Regulations* and practicing due diligence regarding venting indices are important for smoke management during and after prescribed fire ignition.

Smoke management resources:
https://www2.gov.bc.ca/assets/gov/environment/air-land-water/air/reports-pub/smoke-management-framework-20110722.pdf

http://www.env.gov.bc.ca/epd/epdpa/venting/venting.html

http://factsheets.okstate.edu/wp-content/uploads/2017/05/E-1008-Smoke-Management.pdf

Ignitions and Firing Patterns

Each Prescribed Fire Unit (PFU) is unique to its location, history, and internal components. Firing patterns and techniques are thoroughly described in "Conducting Prescribed Fires: A Comprehensive Manual" by J.R. Weir 2009. The BC Wildfire Service, Hinton Training Center, and CIFFC offer training programs and courses in ignitions. In the past, under J.P. Elliott's leadership with support from Qwest Helicopters, Guide Outfitters, the Range Program, the Protection Program, and others, fireguards and fuelbreaks were considered and implemented in the early spring. While this practice diminished in recent years, it is clear that it needs to be re-instated particularly as we observe the fire season extending in both directions – earlier in the spring to later in the fall – which is supported by the literature (Amiro *et al.* 2001, Stocks *et al.* 2003, Flannigan *et al.* 2009, Wotton *et al.* 2010).

It is foreseeable that two entries may be needed in order to successfully conduct prescribed fires in the Region whereby the first entry is the establishment of a fuelbreak and/or fireguard depending on the remoteness and values at risk outside the PFU. In the WUI and the WII this can be achieved by: wetlining (dampening the perimeter of the PFU) with water which may or may not include surfactants; blacklining (burning off and removal of fuel around the PFU); intensive grazing around the perimeter of the PFU; blading, discing, plowing, or taking advantage of existing linear disturbances such as recent pipelines and roads, amongst other practices as noted by Weir 2009.

As operations move from the WUI and the WII into more remote wilderness settings, blacklining can be achieved using aerial and/or hand ignitions to either burn to natural features (snow, rock, ice, water) or to create a fuel free zone strong and stable enough to hold the fire within the PFU given the prescribed fire behaviour objectives. Many prescribed fire practitioners across the Region have noted a shift longevity of the natural barrier of snow and ice. Over the past 4 years, it has anecdotally been observed that snow and ice have rapidly sublimated in the early spring, leaving fuel that is receptive to fire even

though in the past, these areas have been relied on to act as fuelbreaks. This became incredibly apparent in the spring prescribed fires of 2014, 2015, and 2016 particularly in the Fort Nelson zone.

Monitoring

Prior to: Monitoring of the PFU and fuel conditions prior to ignition will be conducted on every prescribed fire. Assessment of the integrity of fireguards, fuel breaks, and natural barriers will occur prior to ignition.

Day of: Test burns will be conducted and recorded with the Go-No-Go checklist.

Post-fire in accordance with Rx fire burn plan: Fire behaviour and spread, weather, and smoke will be monitored and documented with report back to the Prince George Fire Center.

Post-fire for ecological fire effects and achievement of objectives: Implementation of the Peace-Liard Prescribed Fire Monitoring Protocol (P-LRFMP) as included in the Appendix.

In addition to following the P-LPFMP, further suggestions include:

1. Review the Rocky Mountain Trench Ecosystem Restoration Society's monitoring protocols and database and develop one for the Peace-Liard Prescribed Fire Program which can have consistent data input.
2. Re-measure monitoring plots from the past including Range Reference Areas (RRAs) and other research sites (i.e., K. Sittler and S. Leverkus graduate research plots; J. Parminter and B. Hawkes Northern Fire Ecology sites, etc.).
3. Review existing data from original Fish and Wildlife Section prescribed fire work to understand if it can be included in analysis.
4. Review Lousier *et al.* 2009 (pp. 72 and 79-80) and Rooke, S., Pate, B., and R.S. McNay (2016).
5. Continue co-ordination with Hamilton, E. 2017. Burning Questions: reducing risks & ensuring return on investments through synthesis & extension of existing information on ecosystem responses to fire. Approved project proposal to the BC Forest Enhancement Society, Kamloops, BC. March 17, 2017. Project number WR00000069.
6. Continue engagement to refine the desired spatial distribution and extent of fire across the Region and specific scales.
7. Develop a communication, education, and outreach program for prescribed fire in.

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APPENDIX

Data Collection and Mapping Instructions

What you will need:

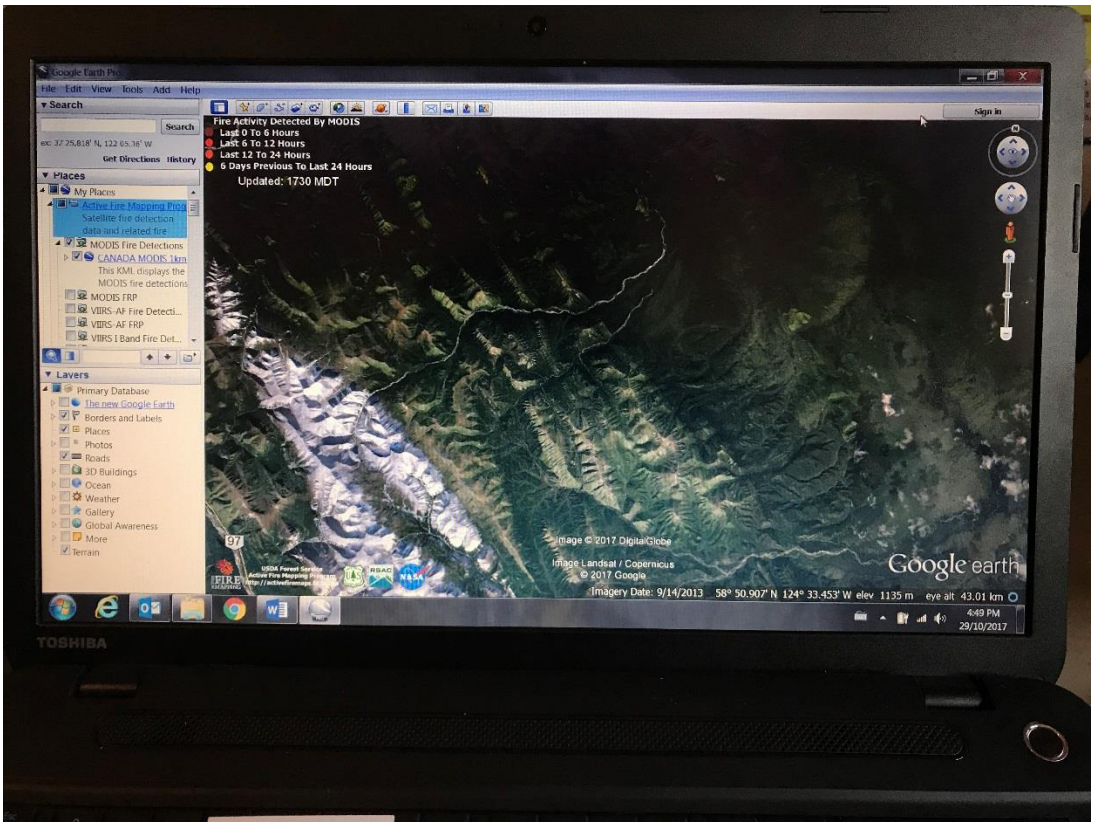
1. Computer with a folder to store your files in (ie. folder named “Prescribed Fire Unit”)
2. External mouse (recommended)
3. Google Earth Pro (recommended)
4. Internet connection
5. GIS Info Form 2017 excel spreadsheet

Things to know before you start:

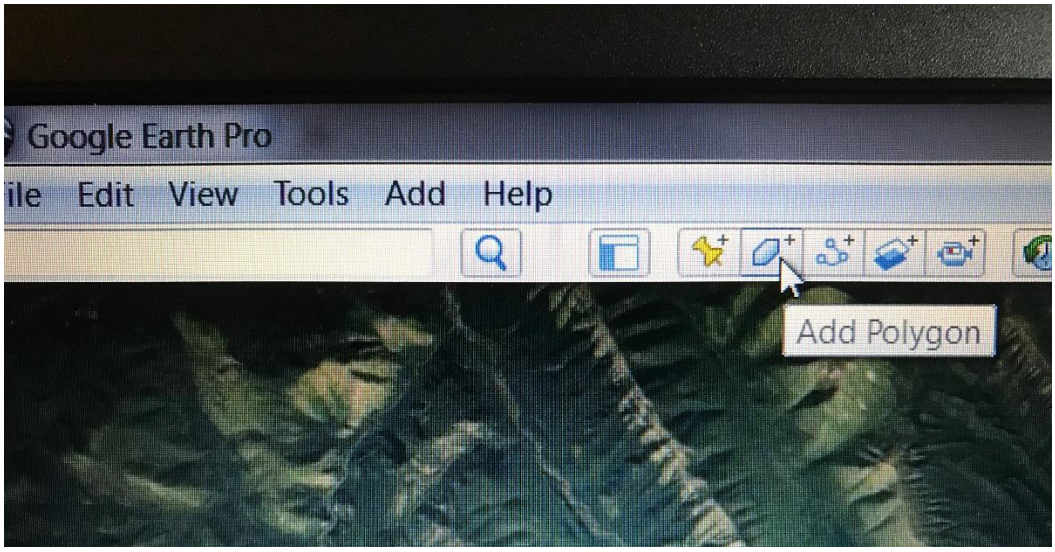
- A polygon is an enclosed circle that you draw on google earth and then save as a **.kml** file to be sent to ShiftingMosaicsConsulting@gmail.com in an email
- PLEASE name your polygon the same name in the excel spreadsheet!!!!

Steps for making a polygon using Google Earth Pro

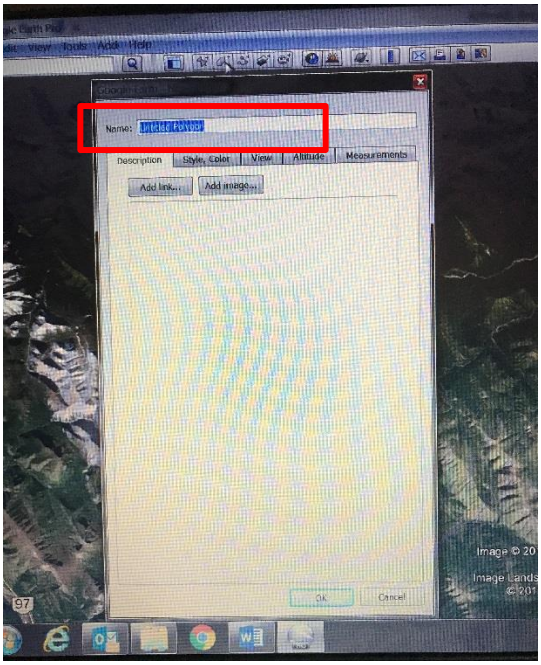
1. Open Google Earth Pro on your computer. Scroll to the location of interest for either doing a prescribed fire or area for protecting from fire. Typically it’s easiest if you make sure that the page is oriented with the north area pointing toward the top of the screen. If your mouse has a scroll bar on it, you can use it to zoom in or out on google earth.



2. Click on the button at the top of your screen, beside the thumbtack, that is an odd shaped circle with a + sign to the northeast corner – “Add Polygon”

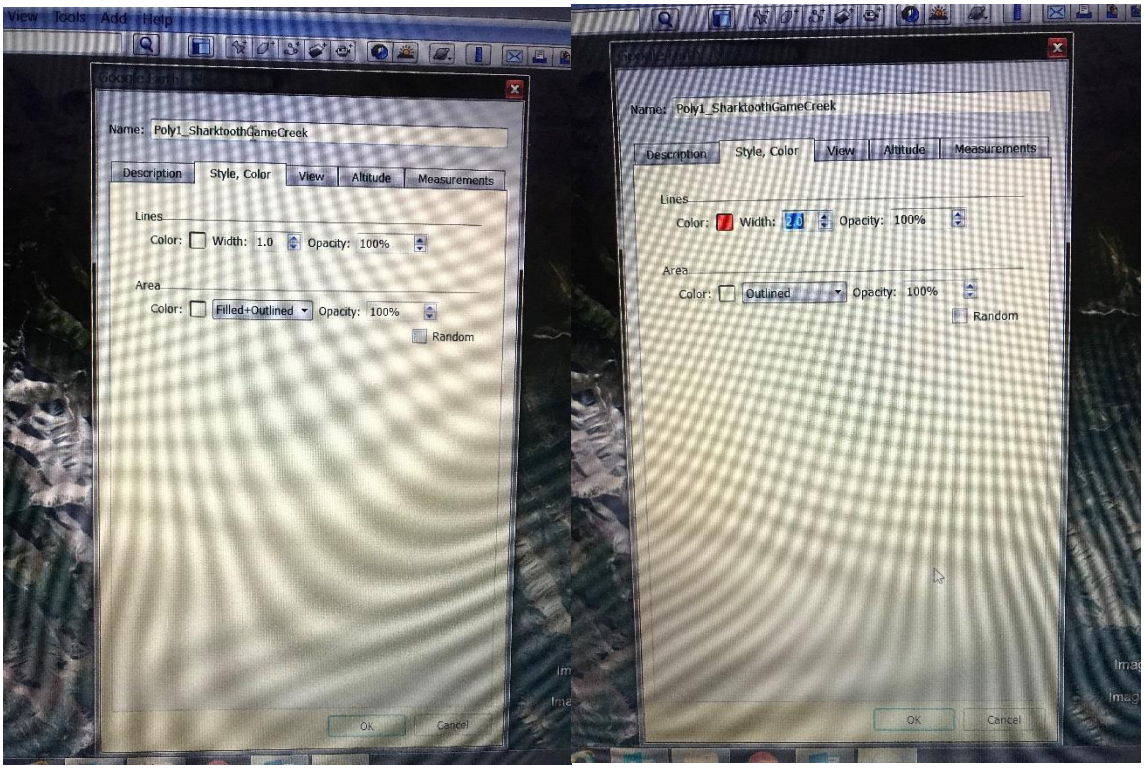


3. Type the name of your polygon into the “Name” box that pops up after you click on “Add Polygon”. This name needs to be the same name that you type into the first row of the excel spreadsheet. That will be the way we connect your polygon with the data you provide us. IT IS IMPORTANT TO KEEP THE NAMES THE SAME!! Please and thank you!

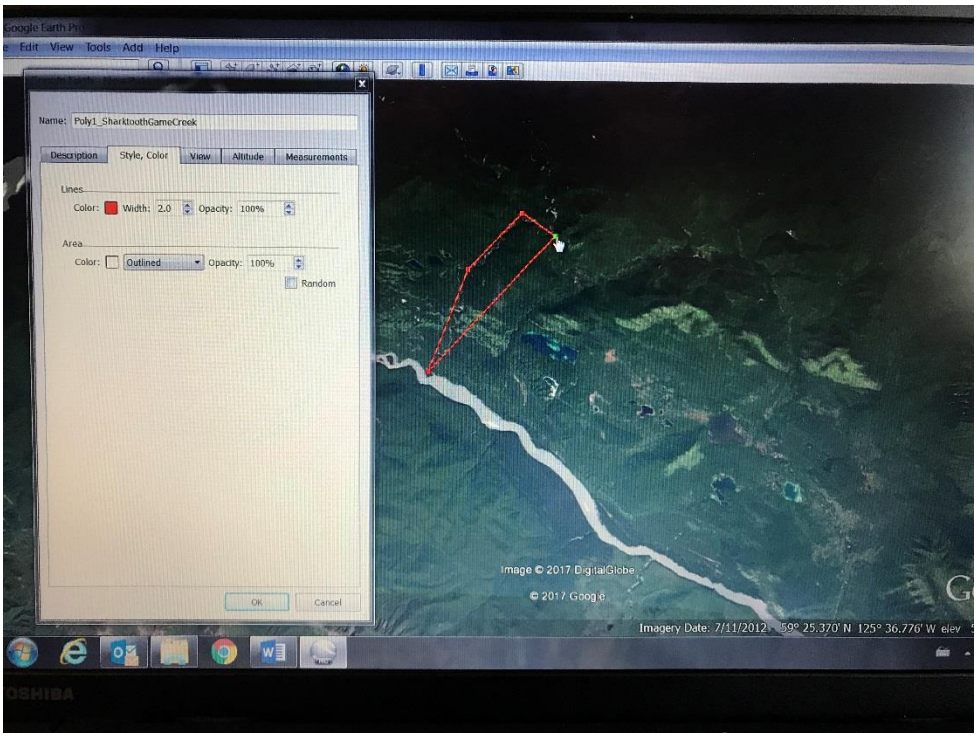


Code * must be same name as .kmz/.kml	Project name	Date captured	Reference	First Nation/Organization
Poly1_YouWritethenameofGeneralLocation	Strategic prescribed fire	Today's date	Your name	Who you represent
Poly1_ElkMtn	Strategic prescribed fire	Oct 4 2017	Sonja Leverkus	Shifting Mosaics Consulting
Poly2_SmithRiverBerries	Strategic prescribed fire	Oct 4 2017	Sonja Leverkus	Shifting Mosaics Consulting

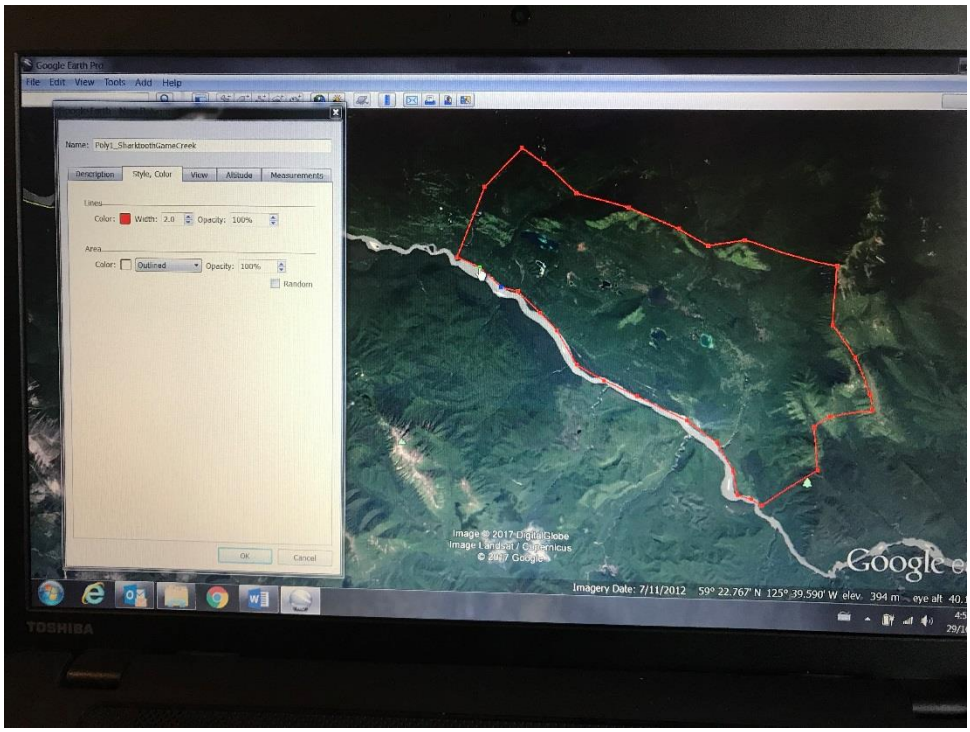
4. Click on the Style, Color tab. Click on the drop down menu under area and select outlined. This will just show the outline of the area you mark. If you keep it filled and outlined then it may be hard for you to navigate when you are making your polygons. You can also change the colour of the line so that it is easier for you to see – click on the box beside the word color. You can increase the thickness of the line by clicking on width – click on the arrows or type into the box beside the word width. LEAVE THIS WINDOW OPEN – Do not click OK yet!



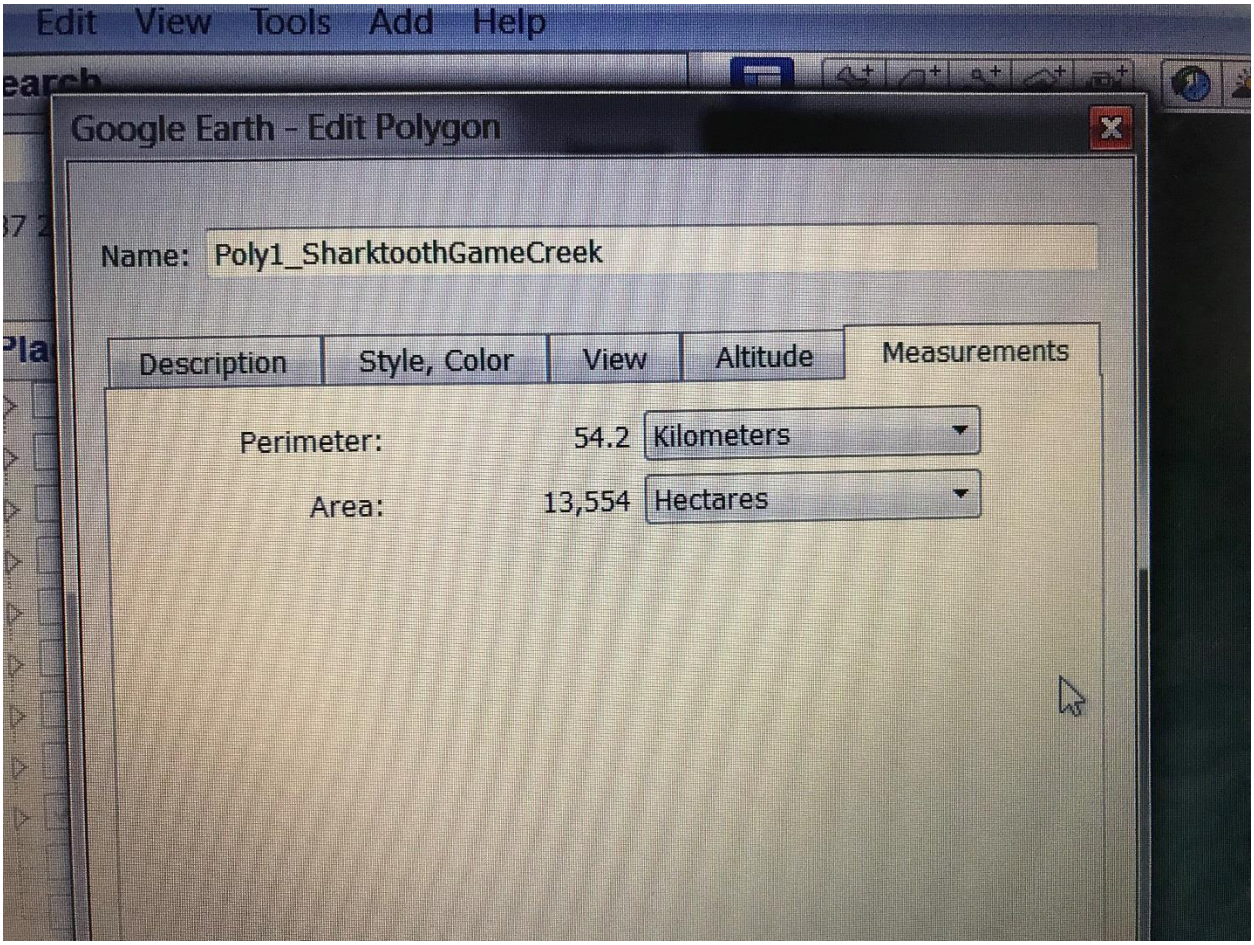
5. Now you are ready to make your polygon! The above dialogue box needs to still be open. You can click and drag the dialogue box that you have entered your name into, off to one side, or if you have 2 monitors, you can move it over the other screen. Using your mouse, you will now click and move your mouse to draw the polygon. The line stretches with your mouse as you move. You can use the arrow keys on your keyboard to help you move the google earth map north/south/east/west and you can use the scroll bar on your mouse (if you have one) to zoom in/out. If you make a wrong click/marker – you can press backspace.



Drawing a polygon (above) and a completed polygon (below). Try to be as accurate as you can, knowing that we are looking for polygons that will meet the objectives/values you bring forward in the excel spreadsheet.



6. Once you have completed your polygon you can click on the measurements tab to see the perimeter and area of the polygon. You will need to add the area in your excel spreadsheet for this polygon.

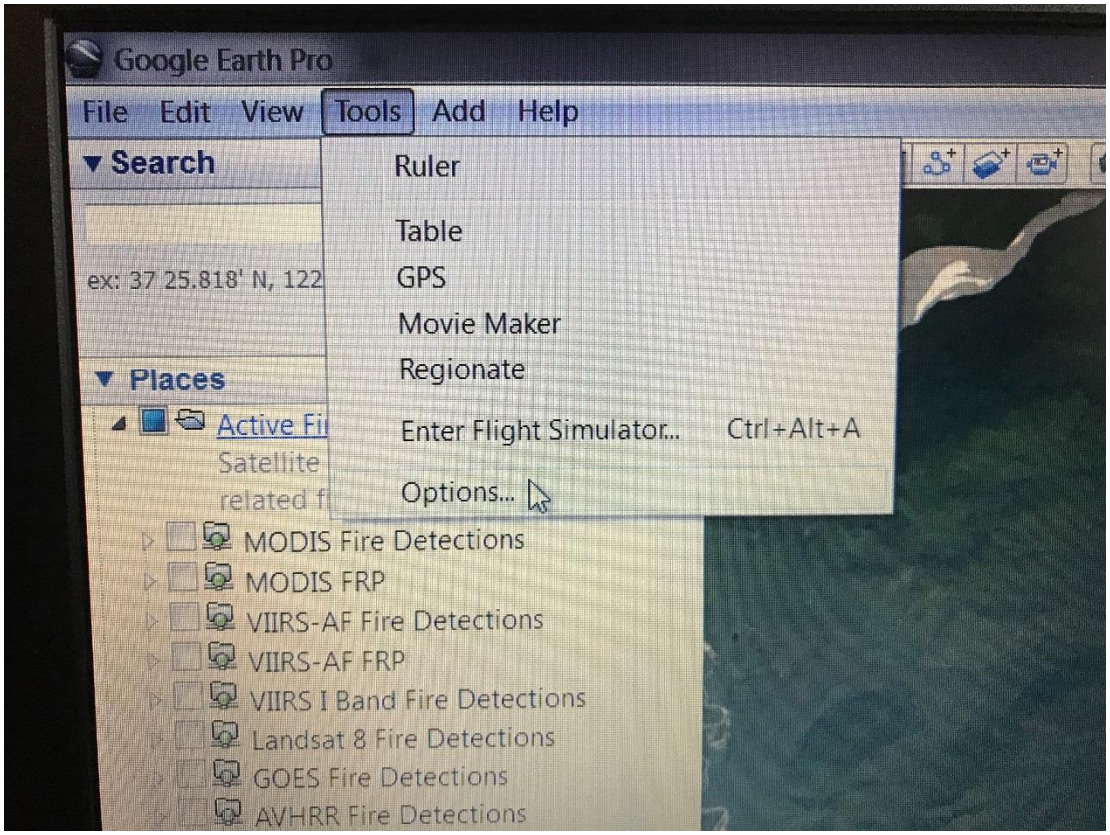


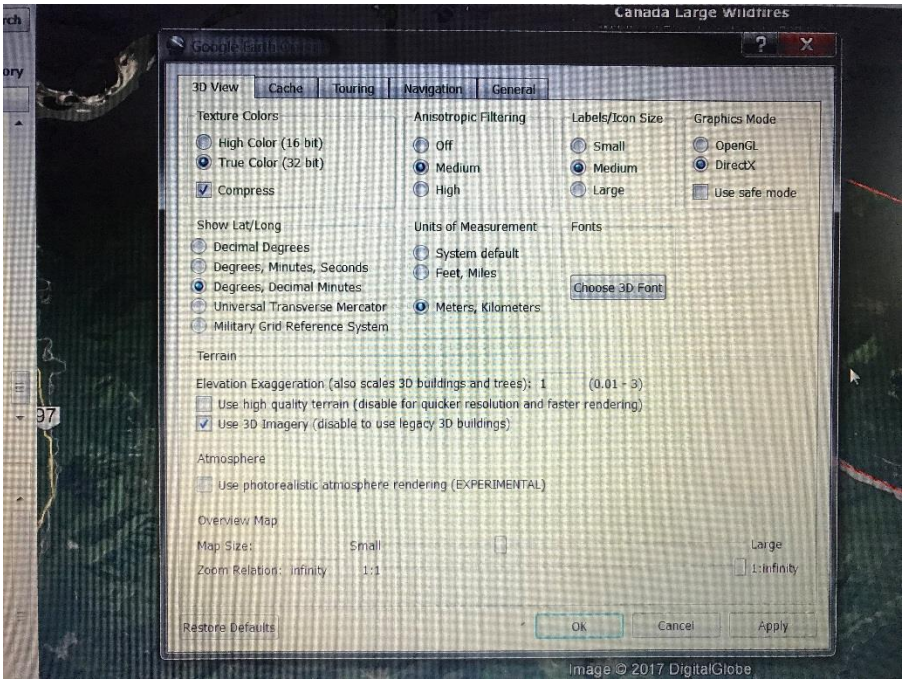
7. And now, click OK! The polygon will be saved to "Temporary places". Right click on the file name and click "Save place as" and save this file in your pre-developed and designated folder (ie. Prescribed Fire Units) as a .**KML** (click on drop down menu for save as type).
8. Go to the excel spreadsheet and complete the info for this shapefile and make sure to save your changes!

Code * must be same name as .kmz/.kml	Project name	Date captured	Reference	Organization	Value	Description	Burnable/Unburnable	Area (ha)	History of last fires	Recommended rotation/TSF	Other comments

9. When you have completed all the polygons and the associated excel spreadsheet, go to your email and email Sonja at ShiftingMosaicsConsulting@gmail.com with all of your appropriate attachments!

10. If you want to see what you area or distance is in different formats, go to the tools tab, click on options and select which format you prefer (i.e. there are some of you who like acres as opposed to hectares).





To help you think about how the distribution of fire across the landscape, this chart could help you:

Please fill in this matrix with the percent ranges over the scale/area that makes sense to you across Region 7B, Northeast BC. For example xx% - yy%. Please include the scale/area you considered.			
Current time since fire	**% of area 1**	**% of area 2**	**% of area 3**
0 - 2 years			
2 - 10 years			
10 - 25 years			
25 - 50 years			
50 - 90 years			
>90 years since disturbance			
Desired time since fire	**% of area 1**	**% of area 2**	**% of area 3**
0 - 2 years			
2 - 10 years			
10 - 25 years			
25 - 50 years			
50 - 90 years			
>90 years			

Name: _____

Contact info: _____

To help you think about the above percent ranges, if this polygon is the area/scale you are considering, how much of this area would you want to see in 0-2 years since fire, 2-10 years since fire, etc. What sort of spatial arrangement of time since fire would you want to see? This could be in TSAs, forest districts, Management Units, or other units that you feel are most appropriate.

Peace-Liard Prescribed Fire Monitoring Protocol (P-LPFMP)

CONTENT PAGE NUMBER

Developed by: Dr. J.D. Scasta and Dr. S.E.R. Leverkus of Shifting Mosaics Consulting in collaboration with M. Lavellée of the Fish and Wildlife Section, Fort St. John, BC Ministry of Forests, Lands, Natural Resource Operations, and Rural Development.

Citation: Scasta, J.D., Leverkus, S.E.R., and M. Lavellée. 2018. Peace-Liard Prescribed Fire Monitoring Protocol. Shifting Mosaics Consulting and BC Ministry of Forests, Lands, Natural Resource Operations, and Rural Development.

PURPOSE:

To quantify the effects of fire and grazing on BC Ministry of Forests, Lands, Natural Resource Operations, and Rural Development soils, vegetation, and wildlife and the subsequent implications for biodiversity, fuel loads, and interacting ecological processes (fire*grazing).

DIRECTIONS FOR USING THIS PROTOCOL:

This sampling protocol presents the field sampling in an order that matters to minimize destruction of trampling by technicians as plots are being measured because all measurements are taken from within the same permanent plot. These permanent plots are based on permanent transects that are 50 m in length. The order of sampling presented in this text document also corresponds with a data sheet. Use the text document and the data sheets together and go in the order presented during the sampling procedure. If you have questions about particular methodologies please email ShiftingMosaicsConsulting@gmail.com.

OBJECTIVES AND JUSTIFICATION:

1. Vegetation Structure and Heterogeneity: The role of fire, grazing, and fire*grazing interacting can facilitate the development of a gradient of herbaceous vegetation structure across the landscape with varying levels of low, medium, and high structures. This variance is often considered to be heterogeneity (Fuhlendorf et al. 2006) and can be important for biodiversity, especially for bird communities (Hovick et al. 2014; Hovick et al. 2015). A commonly used method for measuring vegetation structure was a pole developed by Robel (1970), which measures visual obstruction and is correlated with biomass, and has been applied in a variety of grassland types (Vermeire et al. 2002). See Figure 1 for an example from a burned and grazed grassland in the central United States.

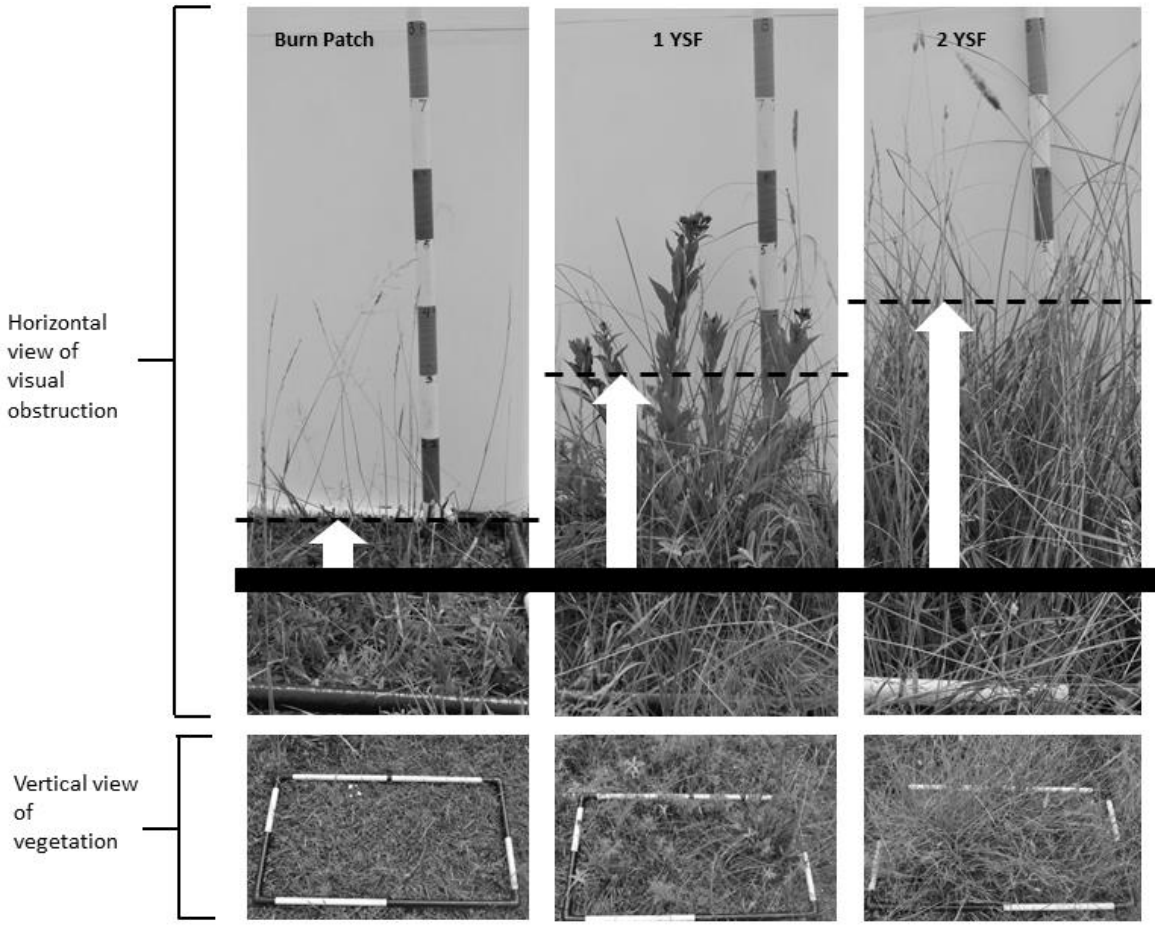


Figure 1. Demonstration of the Robel pole method of measuring visual obstruction in a burned and grazed grassland in the central United States.

2. Community Composition: Fire and grazing can also influence the abundance of plant functional groups and ground covers that fluctuates relative to time-since-fire (Fuhlendorf et al. 2006). Measure plant functional groups and ground cover presence/absence and canopy cover abundance at multiple scales in a nested and hierarchical design. Plant functional groups include: forbs, exotic grass, native C3 perennial grass, native C4 perennial grass, sedge/rush, shrub, tree, and ground covers include rock, bare soil, litter, moss, and lichen. This will use a 50 meter long transect with visual cover estimates and then the determination of presence/absence at one larger 500 m^2 scale along the same transect. We are recommending the visual estimation of canopy cover method over the Line Point Intercept (LPI and related methods) because (1) line intercept type of methods are documented to over-estimate plant cover (Kercher et al. 2003; Korb et al. 2003; Rochefort et al. 2013; Thacker et al. 2015), (2) visual canopy cover estimates are more efficient for technicians to accomplish (almost half the time was required in Rochefort et al. 2013) and thus less expensive in terms of time and money, (3) key plant functional groups and ground cover classes are well suited for visual cover estimates whereas rare plant detection is more ideal for line

intercept methods. The primary issue with visual canopy cover estimation is the potential for observer bias, thus, calibrating technicians prior to starting sampling is critical.

3. Herbaceous Biomass: Measure herbaceous plant biomass to quantify the herbaceous plant materials before fire, after fire, after grazing, or after fire*grazing. This has implications for net primary productivity (NPP), fuel loading, future fire activity, and herbivore demand and nutritional requirements (Busso et al. 2016).

4. Wildlife: All trophic levels of wildlife respond to fire with different preferences relative to time-since-fire. The primary objective for wildlife will be to determine wildlife presence/absence (and occupancy) and use to quantify species responses to fire management, specifically the variability of time-since-fire across the landscape. Use 3 techniques to determine direct evidence of occupancy, indirect evidence of occupancy and abundance, and evidence of use. (1) Direct evidence of presence/absence and occupancy will be accomplished by noting visual confirmation of animals in treated areas (note that this method will be conducted at a broader scale than the next 2 methods described below). This approach, while opportunistic in nature which limits detectability, still will provide an idea of wildlife occupancy as it will require repeated observations at each site over time (Huth et al. 2015). The primary covariate will be time-since-fire and technicians will note observations of wildlife species of interest as they travel to, through, and from treated and untreated areas. This will allow for the modeling of occupancy probabilities relative to fire management including the application of prescribed fire, use of wildfire, or exclusion of fire, all relative to the time-since-fire covariate (MacKenzie et al. 2006). (2) Indirect evidence of presence/absence and occupancy will be accomplished by noting the presence and density of dung identified to wildlife species. The use of line transect surveys of wildlife dung has become an internationally used methodology that is adaptable to a wide spectrum of vertebrate species and can aid management and conservation (Marques et al. 2001). Dung transects have been used to quantify a large guild of wildlife species (> 10) at the species level (Sensenig et al. 2010) and separate groups of species combined with groups of species lumped together (Zavala and Holdo 2005) in Africa and the subsequent response to fires of varying times and sizes. (3) Evidence of wildlife use will be accomplished by documenting herbivory by noting observations of grazing (on graminoids) and browsing (on shrubs). The method will be based on directly observable effects using standardized descriptive classes of field indicators (Albon et al. 2007). Field indicators will have 5 classes and will relate to level of grazing/browsing (None, Light, Moderate, Heavy, and Very Heavy) and will be rated separately for (a) graminoids and (b) shrubs.

5. Soils: Measure the effects on soils, specifically soil organic matter consumption, hydrophobicity, erosion, and texture. This approach is largely based on the "Field Guide for Mapping Post-Fire Soil Burn Severity" a United States Forest Service protocol (RMRS-GTR-243) (https://www.fs.fed.us/rm/pubs/rmrs_gtr243.pdf). This will include the use of

standardized descriptive classes of field indicators for severity ratings for soil surface ground cover, ash color and depth, soil structure, roots, and soil water repellency (aka, hydrophobicity). Guidelines from both technical references have been modified for this customized monitoring protocol. For the soil water repellency test (aka, soil hydrophobicity) we use the NSW Australian standardized test (http://www.www.environment.nsw.gov.au/resources/soils/testmethods/rep.pdf) with one modification of specifying 1 mL of water rather than "1 drop". Measurements of soil erosion are largely based on the rangeland health indicators that pertain to soil erosion as outlined by the US Bureau of Land Management "Interpreting Indicators of Rangeland Health" Technical Reference 1734-6 (https://www.blm.gov/nstc/library/pdf/1734-6rev05.pdf). Finally, it is also possible to use 'erosion pegs' as described in the Australian Northern Rivers Catchment Management Authority's "Fact Sheet 3: Monitoring Erosion" (http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0006/255156/fact-sheet-3-monitoring-erosion.pdf) if pre-treatment or baseline data is taken and pegs can be established.

METHODS:

1. Vegetation Structure and Heterogeneity: Along each 50 meter long transect, the Robel pole will be used to measure vegetation visual obstruction readings (often referred to as VOR) at 5 regular intervals. The pole will be placed at 5m, 15m, 25m, 35m, and 45m. At each position, a VOR reading will be taken from each of the four cardinal directions (Figure 2). We are proposing to use the original Robel pole design that has 1 decimeter demarcations with observers visually assessing vegetation obstruction from a distance of 4 meters at a visual observation height of 1 meter (Figure 3). These can be built using PVC pipe or wooden rods and a 3.4 cm wide size is suggested. We propose they have alternating white and red bands. The red bands can be marked with red electrical tape and then each band marked with a black permanent marker. The bottom can be secured with hose clamps and large nails so the pole can be fastened to the soil surface for a single observer or, if two observers are available, then one person can hold the pole up while the other person takes the measurements. VOR readings are an indication of the lowest band or interval not completely obscured by vegetation (Figure 4). For example, if bands 1, 2, 3, and 4 are mostly obscured but band 5 is more than 50% visible then we would record a 5 (Figure 3). It should also be noted that we can and do expect to have readings of 0 if the bottom of the pole is visible and the majority (> 95%) of band 1 is visible (see Figure 4 for example). It is also important to not bias the readings by avoiding the placing of the pole in areas of bare ground. The Robel pole is designed to capture the feature of the landscape so observers should place the pole as close to the transect intervals as possible.

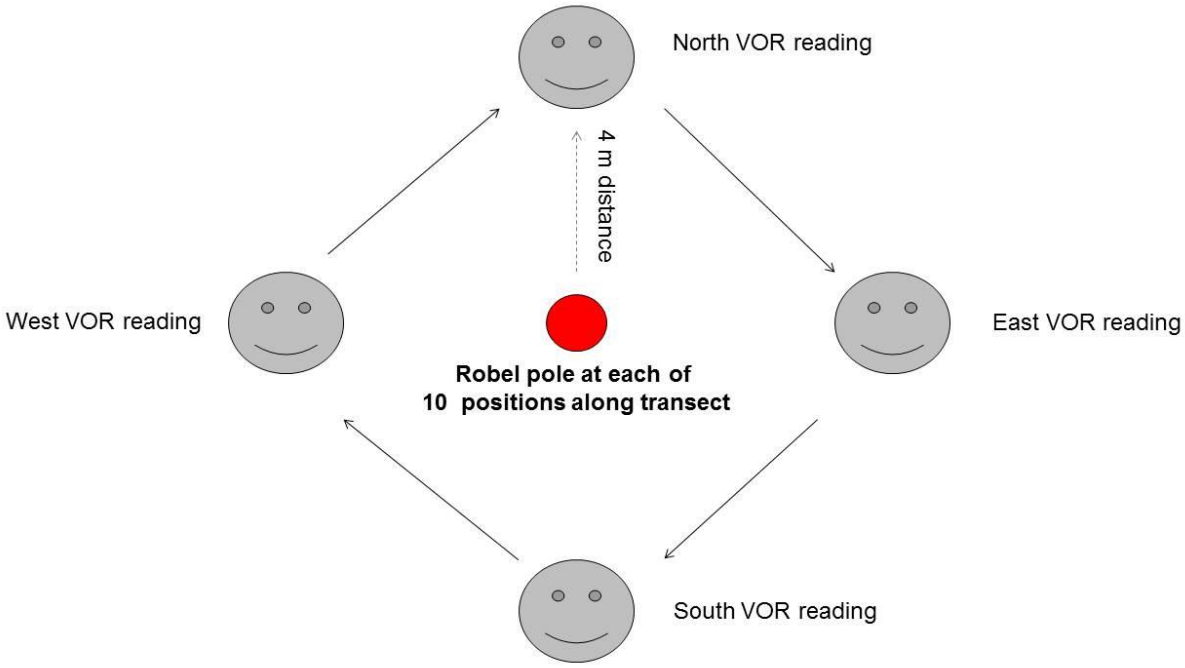


Figure 2. Robel pole readings at each point along the 50 meter transect should include readings from each of the four cardinal directions (North, East, South, and West). This corresponds to the entries in the data sheet.

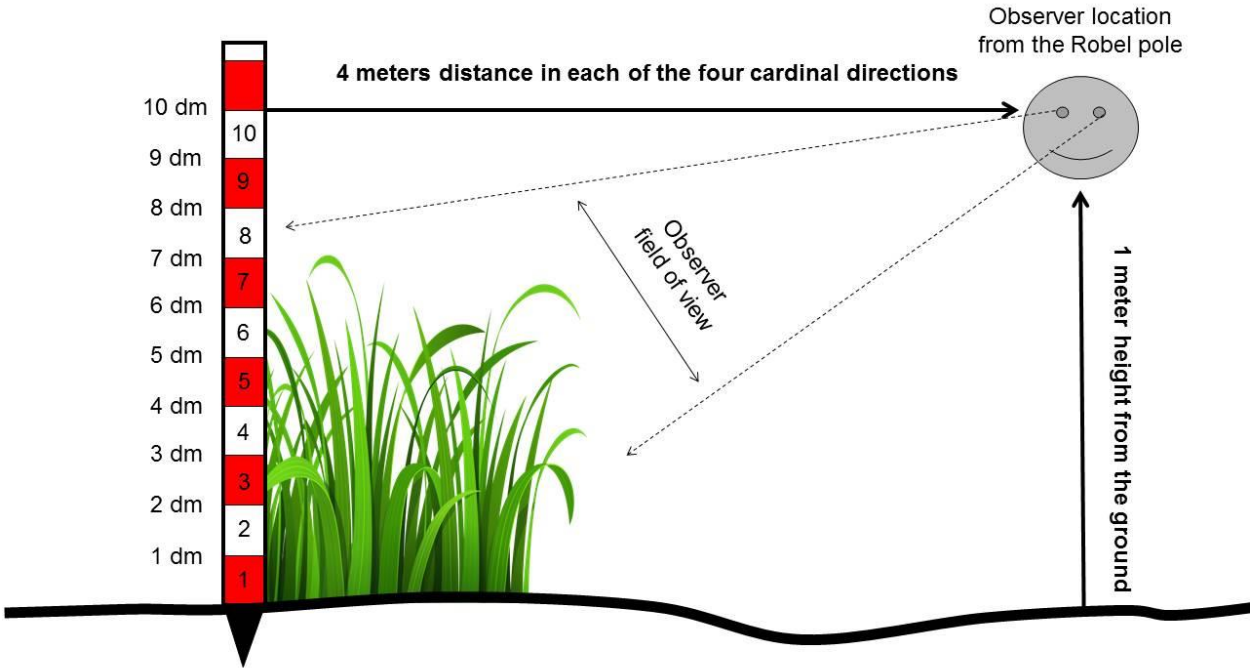


Figure 3. Robel pole with 1 decimeter demarcations and observer position relative to the pole.

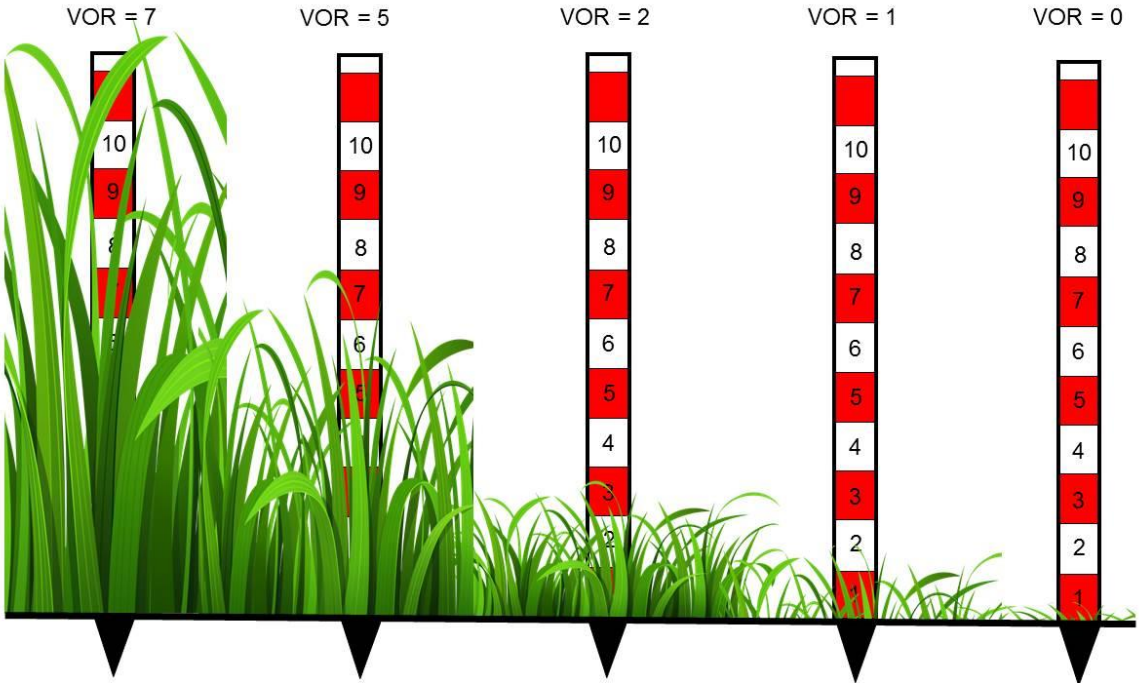


Figure 4. Robel pole examples for determining visual obstruction readings. Note that 0 can and is expected to be a value.

2. Community Composition: We recommend the use of a five - 0.5 m x 1.0 m quadrats placed at equal distances along a 50 meter length tape (Caratti 2006 suggests a minimum of five transects for herbaceous plants). This quadrat size is equivalent to a 0.5 m^2 sampling area per quadrat. This sampling size is ideal for productive grasslands and parks and allows for the detection of shrubs and herbaceous species simultaneously. We recommend estimating 7 plant functional groups and 5 ground cover classes. We suggest the Daubenmire cover class scale with 6 cover classes that are based on the mid-point of each and are designed to collect rapid (and a 0 class for absence) and spatially robust data (Table 2) (Daubenmire 1959). Due to the overlapping plant and ground layers, the sum of the Daubenmire cover classes can and will exceed 100%. From the 50 meter length tape, we also suggest doing a presence/absence inventory from a distance of 5 meters on both sides of the 50 meter tape measure to quantify if any of the other plant functional groups occur at a larger 500 m^2 scale. This nested approach is robust for the detection of less abundant plant species, plant functional groups, or trees in the overstory. On the data sheet, we also suggest that staff determine if there are any problematic plant species that they want to itemize out. These can be placed in the 5 empty fields below the plant functional groups and ground covers list that is in the first column. Examples of such species might include Canada thistle (*Cirsium arvense* (L.) Scop.), yellow toadflax (*Linaria vulgaris* Mill.), or spotted knapweed (*Centaurea stoebe* L.).

Table 1. Plant functional groups and ground covers.

Plant Functional Groups	Ground Covers
Forbs	Rock
Exotic grass	Bare soil
Native C3 (cool-season) perennial grass	Litter
Native C4 (warm-season) perennial grass	Moss
Sedge/Rush	Lichen
Shrub	
Tree	

Table 2. Daubenmire canopy cover classes

Cover Class	Range	Midpoint
0	Not present	None
1	>0 to 5%	2.5%
2	5 to 25%	15.0%
3	25 to 50%	37.5%
4	50 to 75%	62.5%
5	75 to 95%	85.0%
6	95 to 100%	97.5%

3. Herbaceous Biomass: Four randomly selected plots will be clipped, weighed in the field, dried, and weighed in the lab. We recommend weighing in the field (aka a "green weight") just in case something happens to the samples so the data can be preserved and potentially still informative. We recommend using a 0.5 m by 0.5 m quadrat which is equivalent to a 0.25 m^2 sampling area per quadrat. To determine random plots, the vegetation sampling quadrat will be thrown from the starting pin and the ending pin along the permanent monitoring transect to both sides of the transect. Because we are concerned with both forage and fuel, we suggest clipping all standing herbaceous biomass (both living and dead) and not clipping any shrubs or cacti. All herbaceous plants that are clipped should be identified to plant functional group if possible and noted. Clipped plant material should be placed in a paper bag. Dry plant material in an oven for 24 hours at 60 °C. If a drying oven is not available, air dry for at least 48 hours. Once biomass has been dried, it should be re-weighed and converted to kg per hectare.

   Conversion to kg/ha example: Consider a clipped dry weight from a 0.25 m^2 quadrat was 90 g. Divide 90 g by 0.25 m^2 to determine g/m^2. This equals 360 g/m^2. Then divide by 1000 g to convert to kg/m^2. This equals 0.36 kg/m^2. Then multiply by 10,000 m^2 to convert to kg/ha. This equals 3,600 kg/ha. To simplify this conversion, simply divide by 0.25 and multiply by 10.

4. Wildlife
    a. *Visual Occupancy:* Technicians will note the number of key wildlife species that are noted within a treated area as they travel to, through, and from plots in portion 4a of the data sheet. Similarly, if species are noted outside of a treated area then that should also be noted along with pre-treated areas. This sampling method relative to the permanent plots for which all sampling is based is demonstrated in Figure 5. If additional space on the data sheet is needed due to a lot of wildlife sightings, please use the back of the data sheet.

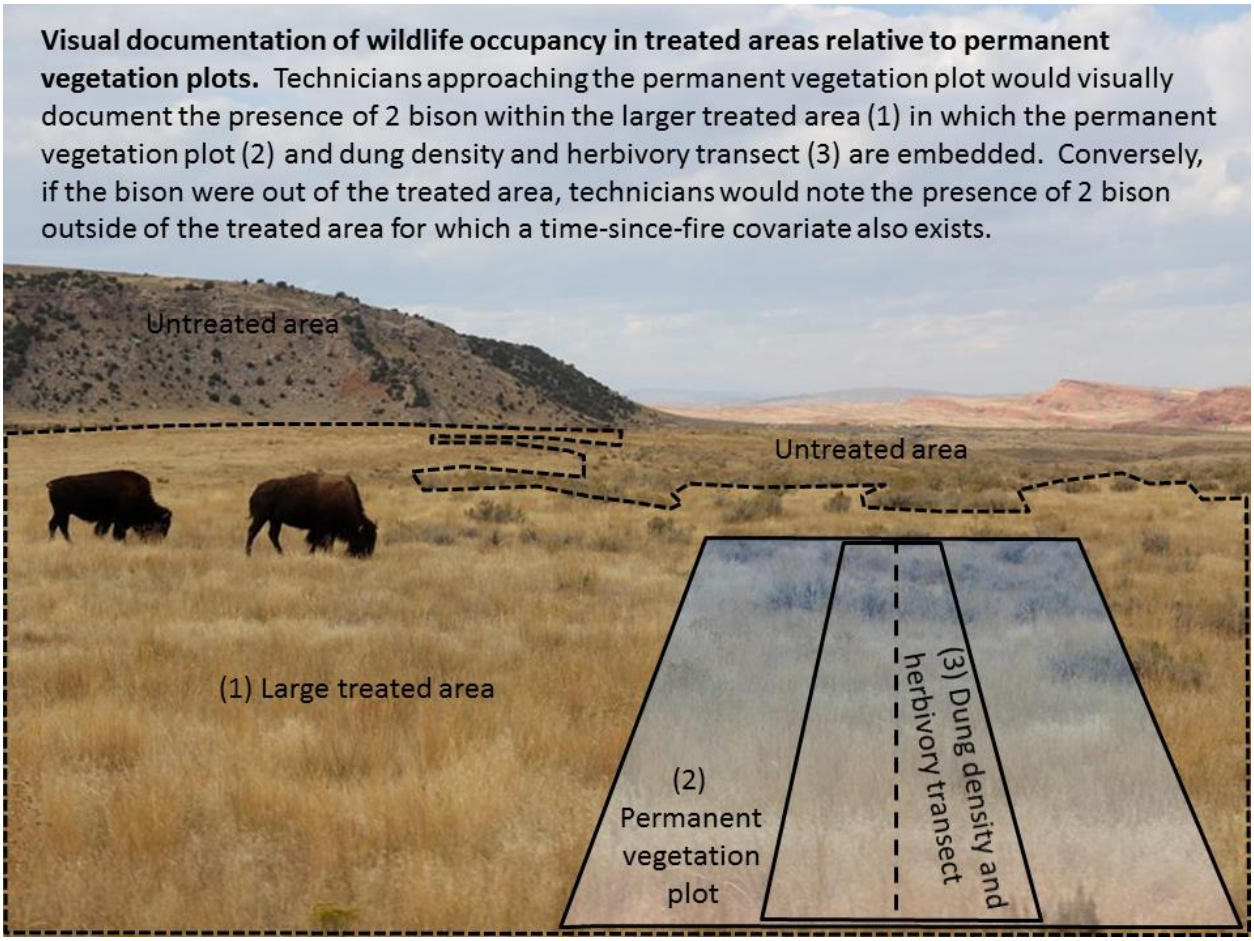


Figure 5. Wildlife sampling protocol relative to landscape scales at which treatments are applied and animal occupancy/presence is noted and plot scales at which dung density and herbivory are noted.

    b. *Dung Transect:* Technicians will begin on the left side of the tape and will walk a belt transect 2m wide down the length of the 50m transect. While walking, mark each individual dung pile for each wildlife species of interest in portion 4b of the data sheet. Once the left side of the transect is complete, do the same method on the right side of the transect. Note that in portion 4b of the data sheet, 4 blank rows are available to note wildlife species other than deer, elk, and moose.

You may also consider small animals such as rabbits and domestic livestock such as cattle.

c. *Herbivory:* Using the 4c portion of the data sheet, technicians will use visual field indicators to rate herbivory at 3 portions along the 50m transect at 0m, 25m, and 50m. At each point, herbivory will be separately rated for graminoids (all grasses, sedges, and rushes combined) and for shrubs. The rating index has 5 classes including None, Light, Moderate, Heavy, and Very Heavy. Descriptions for each are provided in Table 3.

Table 3. Descriptions of visual field indicators of grazing/browsing to be used for separate assessments of graminoids then shrubs in each permanent plot.

None	Light	Moderate	Heavy	Very Heavy
No noticeable removal of graminoid or shrub vegetation.	Some individual plants lightly browsed or grazed. Individuals that were not browsed or grazed are abundant. Browsing is limited to new leader tips and grazing is limited to palatable species.	For graminoids, approximately 50% of the available biomass is removed. For shrubs, new leader tips have been largely removed.	All accessible plant material has evidence of browsing/grazing. No unbrowsed individuals. More than 75% of available graminoid biomass removed.	All accessible plant material has evidence of browsing/grazing. No unbrowsed individuals. More than 90% of available graminoid biomass removed.

5. Soils

A scale of Low, Moderate, and High soil burn severity will be used for ground cover condition, ash color/depth, soil structure, and roots (Table 4). For pictures of each soil burn severity rating, we suggest referring to the "Field Guide for Mapping Post-Fire Soil Burn Severity" a United States Forest Service protocol (RMRS-GTR-243) (https://www.fs.fed.us/rm/pubs/rmrs_gtr243.pdf). For soil water repellency, use a standard water dropper that can load 1 mL of distilled water at a time. In a level spot, gently scrape away any ash to expose the soil surface. Drop 1 mL of distilled water from the water dropper to the soil surface form a height of 1.5cm. If the drop forms a beaded and spherical shape that is sitting on top of the soil surface without penetrating the soil and disappearing, this is an indication of soil water repellency (hydrophobicity). From the time the water is dropped, record the length of time to disappearance using the 5 categories in Table 5. Finally, note the presence of rills, gullies, or pedestals. All soils estimates will be conducted at 0m, 25m, and 50m along the permanent transect.

Table 4. Soil burn severity ratings for 4 soil features.

Feature	Low	Moderate	High
Ground Cover Condition	No change to < 50% litter consumption relative to pre-fire conditions	50 to 80% litter consumption with recognizable leaves/needles	Little litter to no litter remaining; generally no recognizable leaves/needles
Ash Color/Depth	Black ground surface but ash not measureable	Thin layer of black/ gray ash (0.5cm to <3cm depth)	Thick layer (3 to 6cm) of powdery gray to white ash
Soil Structure	No change, no consumption of organic matter in top 1cm of soil	Structure slightly altered with some organic matter in top 1cm	Aggregate stability destroyed. Loose and single grained soil dominates. Organic matter consumption in the top 5cm of soil.
Roots	Fine roots (<0.25cm diameter) intact and unchanged	Fine roots (<0.25cm diameter) charred/scorched. Large roots (0.25 to 0.5cm diameter) intact.	Most fine roots consumed/charred with some charring on very large roots (0.5 to 8cm diameter)

Table 5. Time to water disappearance and soil water repellency rating.

Time to disappearance	Repellency
<1 second	None
1 to 10 seconds	Very Low
10 to 50 seconds	Low
50 to 260 seconds	Moderate
>260 seconds	Severe

Field Sampling Protocol: All of the methods are arranged in a single permanent plot design as shown in Figure 5. All sampling will be conducted in the same permanent transect.

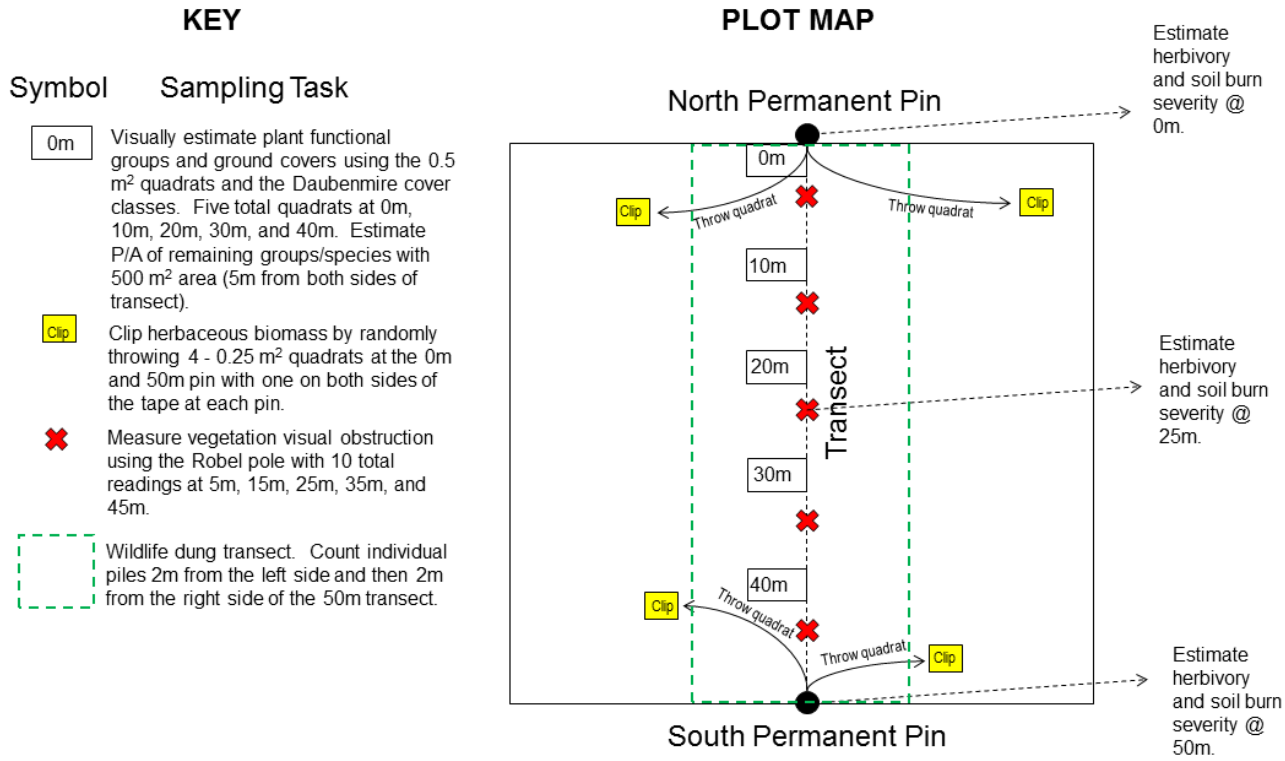


Figure 6. Sampling plot design.

Table 6. Steps to complete the monitoring protocol.

Step	Description
1	On the data sheet, note the observer, date, and site code.
2	Note the relevant fire, grazing, and fire*grazing interaction metadata.
3	Mark the North point with the GPS. Secure the 50 meter long tape to the ground with a pin and using the GPS stretch the tape completely out by walking directly to the south. Pin the end of the tape and mark the South point with the GPS.
4	Begin at the 5 m point along the transect and prepare the Robel pole. At this point, either stake the pole into the ground or have an assistant hold the pole. Record 4 visual obstruction readings (VOR) at the 5 m location by viewing the vegetation visual obstruction from the North, then the East, then the South, and finally the West. Now move to the 15 m point along the transect and repeat. Continue to repeat at 15 m, 25 m, 35 m, and 45 m. Record all VOR readings in the data sheet in Section 1 “ROBEL POLE MEASUREMENTS OF VEGETATION STRUCTURE”.

5	Now you will visually estimate plant functional group and ground covers. This will require the reading of 5 quadrats. The first 0.5 m^2 quadrat is placed at the 0 m mark and the short side of the quadrat will extend to the 0.5 m mark. The second quadrat is placed at the 10 m mark and extends to the 10.5 m mark. The third, fourth, and fifth quadrats are similarly placed at the 20, 30, and 40 meter marks. In the plot map (Figure 5), these are the white boxes.
6	In each quadrat, visually estimate all of the plant functional groups and ground covers found in Table 1 by using the Daubenmire cover classes found in Table 2. These are all recorded in the data sheet in Section 2 "VISUAL COVER CLASS ESTIMATES".
7	Now, you will walk 5 m along each side of the transect to note the presence of any other functional groups that were not noted in the 0.5 m^2 quadrats above. This is also the time to note any exotic/invasive plant species and any tree species that may have not been detected in the 0.5 m^2 quadrats.
8	Return to the 0 m point on the transect and throw the 0.25 m^2 quadrat to the left. Clip all of the herbaceous biomass down to the soil surface level. Place in a paper bag and obtain a weight wet and record on the data sheet in Section 3 "CLIP HERBACEOUS BIOMASS ESTIMATES". Repeat this process by throwing the 0.25 m^2 quadrat to the right side, then go to the 50 m mark and again repeat this process by throwing the 0.25 m^2 quadrat to the left, clipping and bagging, then throwing to the right and clipping and bagging.
9	Store all herbaceous biomass samples for transport to a drying oven and re-weighing. All wet and dry weights should be noted in the corresponding data sheet.
10	Now you will go to Section 4 "WILDLIFE" on the data sheet. In Sub-section 4a of the data sheet, note any wildlife species you have seen traveling to or through the treated area. When you leave, if you see wildlife record that here.
11	In Sub-section 4b of the data sheet, you will now record data for the wildlife dung transect. Starting at the 0m mark along the transect, walk along the left side of the transect and record all individual dung piles by species until you reach the 50m mark. Now, turn around and walk down the other side of the transect and record the same thing until you reach the 0m mark again.
12	In Sub-section 4c, you will now rate grazing and browsing herbivory at the 0m, 25m, and 50m marks along the 50m transect. Use the 5 point rating index and note None, Light, Moderate, Heavy, and Very Heavy.
13	In Section 5 "SOILS", you will now rate the soil burn severity. For the first four estimates (Ground Cover Condition, Ash Color/Depth, Soil Structure, and Roots) you will use the Low, Moderate, High severity index. For Soil Water Repellency, you will conduct the water disappearance test using 1mL of distilled water dropped from 1.5cm onto exposed surface soil and will record the time it takes for the soil to disappear into the soil. For Rills, Gullies, Pedestals, you will need to note if any of these features occur. All soils features are to be estimated at the 0m, 25m, and 50m marks along the 50m transect.
14	Review the data sheet to make sure that sampling was conducted for all 5 sections.

Site Metadata:

We suggest that staff use a standardized approach to developing site codes based on metadata. While we are not intimately familiar with the study area, we do suggest that this incorporate some combination of known explanatory variables including site location, year of sample, burned/unburned, and transect #. An example might be something like the following: North Pasture, 2017 sampling, burned, transect number 1. The resulting site code would be: NP-17-B-T1. Additional covariates that could be considered would be aspect and we recommend at least 3 replications per aspect per burn unit to allow for the quantification of variance both within and across aspects.

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Process for applying for prescribed fire (in/out of Park)

PROCESS FOR ALL RANGE HOLDERS AND MOE APPLYING FOR A BURN WITHIN A PARK

Step 1: **APPLICANT** contacts the Peace-Liard Parks and Protected Area Section Head (4th Floor Beatton Building, Fort St. John, V1J 6M7 or by phone at 250.787.3411)
Your communication should advise where you wish to burn, that it is for horse grazing and include a map (which can be later used in the burn plan application).
→ once decision is made (approval or rejection) a letter of notification will be sent to you
→ if approval, a copy of your letter will be cc'd to Range Officer (Sonja) and to Protection Officer (Ralph or Harry or Rick)

Step 2: Range Officer (Sonja) sends application package (Prescribed Fire Burn Plan[1] and BC Parks Impact Assessment Process: Level 1, Preliminary Screen Report[2]) and cc's Parks (Section Head, Al and/or Rob and/or Rob). Range Officer will include a pre-addressed envelope with the package to avoid confusion as to where to send this.

Step 3: **APPLICANT** receives this package and complete the paperwork. The "Ultimate Burn Plan Team" is available to support you through this process. Contact the Range Officer (Sonja) to make a meeting.

Step 4: **APPLICANT** mails this package in the pre-addressed envelope.
→ This begins the review process by the Section Head or Area Supervisor (Al and/or Rob and/or Rob) who will proceed with referrals and consultation as required (i.e. with Ecosystems and Fish & Wildlife from MOE if appropriate).
→ if rejected, you will be notified.

Step 5: Section Head or Area Supervisor (Al or Rob or Rob) sends approved or rejected package to Range Officer (Sonja) for review.
→ This begins the review process by the Range Officer (Sonja) who will proceed with referrals and consultation as required (i.e. with Ecosystems and Fish & Wildlife from MOE if appropriate).
→ if rejected, you will be notified.

Step 6: Range Officer (Sonja) sends approved or rejected package to Protection Officer (Ralph or Harry or Rick) for final review.
→ if rejected, you will be notified.

Step 7: Upon final approval or rejection by Protection Officer (Ralph or Harry or Rick), letter of notification will be sent to applicant. Original copy goes to applicant, photocopies go to: Fire Center, Range File (15700-20/X), Parks and to white binder).

Step 8: If approval, **results of fire are requested** i.e. did it burn, did it not burn, why, why not, etc. It is expected that documentation will be taken in the form of pictures and video which will be shared with the Range Officer (Sonja) and the Area Supervisor (Al or Rob or Rob)

***NO BURNING WILL BE DONE IN ECOLOGICAL RESERVES**
***BURN BOSS COURSE COMING SOON**
1 http://bcwildfire.ca/Prevention/PrescribedFire/createplan.htm
2 http://www.env.gov.bc.ca/bcparks/conserve/impact/impact.html

PROCESS FOR ALL RANGE HOLDERS AND MOE APPLYING FOR A BURN

Step 1: **APPLICANT** contacts the Range Officer (Sonja) and communicates that they wish to burn, that it is for horse grazing and include a map (which can be later used in the burn plan application).

Step 2: Range Officer (Sonja) sends you the application package (Prescribed Fire Burn Plan[1]).

Step 3: **APPLICANT** receives this package and completes the paperwork. The "Ultimate Burn Plan Team" is available to support you through this process.
→Contact the Range Officer (Sonja) to make a meeting.

Step 4: **APPLICANT** sends the package back to the Range Officer (Sonja).
→ This begins the review process by the Range Officer (Sonja) who will proceed with referrals and consultation as required (i.e. with Ecosystems and Fish & Wildlife from MOE, etc. if appropriate).
→ if rejected, you will be notified.

Step 5: Range Officer (Sonja) sends approved or rejected package to Protection Officer (Ralph or Harry or Rick) for final review.
→ if rejected, you will be notified.

Step 6: Upon final approval or rejection by Protection Officer (Ralph or Harry or Rick), a letter of notification will be sent to you. Original copy goes to applicant, photocopies go to: Fire Center, Range File (15700-20/X), and to white binder).

Step 7: If approval, **results of fire are requested** i.e. did it burn, did it not burn, why, why not, etc. It is expected that **documentation will be taken** in the form of pictures and video which will be shared with the Range Officer (Sonja).

***NO BURNING WILL BE DONE IN ECOLOGICAL RESERVES**
***BURN BOSS COURSE COMING SOON**

1 http://bcwildfire.ca/Prevention/PrescribedFire/createplan.htm

Other useful websites:
http://www.for.gov.bc.ca/hra/ - Range Branch
http://bcwildfire.ca/ - Protection Branch
http://www.for.gov.bc.ca/code/ - Forest and Range Practices Act
http://www.qp.gov.bc.ca/statreg/stat/W/04031_01.htm - Wildfire Act
http://www.for.gov.bc.ca/hra/Restoration/index.htm - Ecosystem Restoration

2017 Prescribed (Rx) Fire Engagement Questions

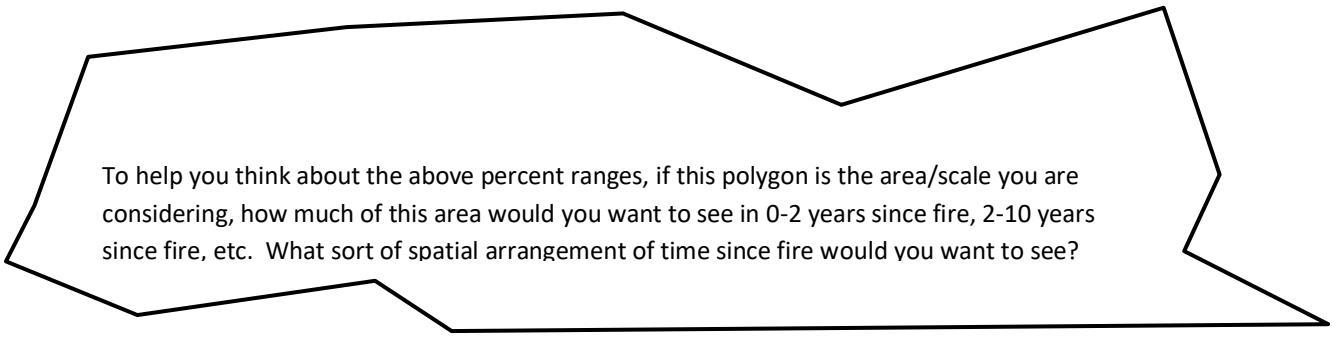
1. What is your experience with Rx fire?
2. What is your mandate regarding Rx fire?
3. What should the objectives be around fire?
4. What are the target numbers for wildlife in NEBC and their locations?
5. Describe areas where fire needs to be absent? What should not burn and why?
6. Describe areas where fire is acceptable? What should burn and why?
7. What scale(s) should Rx fire be planned and what boundaries make the most sense?
8. What are your concerns/thoughts around fire in the Wildland-Urban Interface/Wildland Industrial Interface/Wildlands?
9. How does Rx fire interact with Community Wildfire Protection Plans and the Provincial Strategic Threat Analysis?
10. Why do you believe that fire is or is not important for wildlife?
11. What are the 5 most important considerations in a Strategic Rx Fire Program?
12. How do you see a Rx Fire Program being implemented in NEBC? What are the delivery methods and options?
13. How can the strengths of the previous Rx fire programs in NEBC be incorporated in the new Plan?
14. What are the weaknesses/challenges/areas for improvement from previous Rx fire programs in NEBC?
15. What are the biggest threats for a Rx fire program in NEBC?
16. Who should be involved in an NEBC Rx fire program?
17. What are your suggestions about the future of Rx fire and how it can be implemented in a safe, effective manner?
18. What are the potential funding sources for Rx fire? Who should fund the program?
19. Who should hold the liability for Rx fire? How can liability be addressed in the Plan?
20. What are the additional management considerations around wildlife and its habitat that need to be considered in this Plan?
21. Is there any additional literature/research/considerations that you would like to have brought forward in this Plan?
22. Please review and fill in the matrix on P.2.

Please fill in this matrix with the percent ranges over the scale/area that makes sense to you across Region 7B, Northeast BC. For example xx% - yy%. Please include the scale/area you considered.

Current time since fire	% of area 1	% of area 2	% of area 3
0 - 2 years			
2 - 10 years			
10 - 25 years			
25 - 50 years			
50 - 90 years			
>90 years since disturbance			
Desired time since fire	**% of area 1**	**% of area 2**	**% of area 3**
0 - 2 years			
2 - 10 years			
10 - 25 years			
25 - 50 years			
50 - 90 years			
>90 years			

Name: _____

Contact info: _____



Peace-Liard Prescribed Fire Unit Maps

As attached with final documents.

Example of a Landscape Disturbance Matrix

Site 1	Soil	Aspect				Slope						
Current area (ha) in	**type**	**North**	**East**	**South**	**West**	**Flat**	**Gentle**	**Moderate**	**Steep**	**BEC zone, ESite, etc**	**Altitude**	**land cover**
0-2 years since disturbance												
2-10 years since disturbance												
10-25 years since disturbance												
25-50 years since disturbance												
50-90 years since disturbance												
> 90 years since disturbance												
unknown												
Desired area (ha) in												
0-2 years since disturbance												
2-10 years since disturbance												
10-25 years since disturbance												
25-50 years since disturbance												
50-90 years since disturbance												
> 90 years since disturbance												
Site 2												
Current area (ha) in												
0-2 years since disturbance												
2-10 years since disturbance												
10-25 years since disturbance												
25-50 years since disturbance												
50-90 years since disturbance												
> 90 years since disturbance												
unknown												
Desired area (ha) in												
0-2 years since disturbance												
2-10 years since disturbance												
10-25 years since disturbance												
25-50 years since disturbance												
50-90 years since disturbance												
> 90 years since disturbance												

A structural example of the Landscape Disturbance Matrix is developed by Leverkus (2015) and Leverkus *et al.* (2017).