



## **Grande Prairie Wildfire Mitigation Strategy: South Bear Creek 2019**

**Submitted to The City of Grande Prairie Fire Department  
1<sup>st</sup> Floor, City Hall 10205-98 Street Grande Prairie, AB T8V 2E7**

**Prepared by Shifting Mosaics Consulting  
PO Box 3857 Fort Nelson BC V0C 1R0  
[ShiftingMosaicsConsulting@gmail.com](mailto:ShiftingMosaicsConsulting@gmail.com)**

**December 14 2019**



## Contents

1.0 Introduction .....	1
2.0 Planning Area and Stakeholders.....	2
2.1. Planning Area Boundary.....	2
2.1.1. Planning Area Boundary.....	2
2.1.2. Stakeholders and Jurisdictional Authorities .....	4
2.1.3. Biophysical Description .....	5
2.2. Planning Strategies and Integrated Planning .....	6
2.2.1. The County of Grande Prairie No. 1 Wildfire Mitigation Strategy .....	6
2.2.2. Aquatera Wildfire Preparedness Guide for the Grande Prairie Assets .....	7
2.2.3. The City of Grande Prairie Parks and Open Space Master Plan.....	7
2.3.4. Mowing Schedule.....	7
2.3. First Nation Consultation .....	8
3.0 Hazard and Risk Assessment .....	9
3.1. Values-At-Risk.....	9
3.1.1. Structural .....	9
3.1.2. Ecological.....	9
3.2. Hazard Assessment.....	11
3.2.1. Grande Banks/South Bear Creek Area/ 68 <sup>th</sup> Avenue to south.....	11
3.2.2. Country Club/South Bear Creek Area/ 68 <sup>th</sup> Avenue to south .....	11
3.2.3. 68 <sup>th</sup> Avenue to 72 <sup>nd</sup> Avenue.....	11
3.2.4. 72 <sup>nd</sup> Avenue to Michaels Boulevard.....	12
3.2.5. Mission Heights, Michaels Boulevard to 84 <sup>th</sup> Avenue .....	12
3.2.6. Swanavon (84 <sup>th</sup> Avenue to 100 <sup>th</sup> Avenue) – Eastside.....	12
3.3. Risk and Hazard Assessment .....	14
3.3.1. Fire Behaviour Analysis Methodology.....	14
4.0 FireSmart Activities.....	20
4.1. Education and Communications Options.....	20
4.1.1. Present Initiatives .....	20
4.1.2. Communication Plan .....	20
4.1.3. Recommendations .....	20
4.2. Vegetation Management Options .....	21
4.2.1. Existing Fuel Management Activities .....	21



4.2.2. Proposed Fuel Management Prescriptions .....	21
4.2.3. Recommendations .....	21
4.3. Legislation Options .....	22
4.3.1. Local Legislation, Policies, and Plans .....	22
4.3.2. Municipal Planning Bylaws .....	22
4.3.3. Other Plans and Policies .....	22
4.3.4. Recommendations .....	23
4.4. Development Options .....	23
4.4.1. Structural Options .....	23
4.4.2. Infrastructure Options .....	23
4.4.3. Recommendations .....	23
4.5. Interagency Cooperation and Cross Training Options .....	23
4.5.1. Present Initiatives .....	23
4.5.2. Recommendations .....	24
4.6. Emergency Planning Options.....	24
4.6.1. Present Initiatives .....	24
4.6.2. Recommendations .....	24
4.7. Funding Options.....	24
4.7.1. Recommendation.....	24
5.0 Implementation and Maintenance Plan .....	25
5.1. Fuel Breaks 1-4 .....	25
5.2. Fuel Treatment Units 1 & 2 .....	25
5.3. Prescribed Fire .....	25
References .....	27
Appendices.....	28
Appendix 1 – Fire Behaviour Information.....	28
Fire Intensity Class Examples .....	29
Fire Weather Indices Examples .....	30
Fire Behaviour Associated with Forest Fuel Types and Fuel Type Description .....	32
FBP System Fuel Typical Fuel Complex .....	33
Standard Photographs of CFFDRS FBP System Fuel Types.....	34
Description of CFFDRS FBP System Fuel Types.....	35
Standard Photographs of CFFDRS FBP System Fuel Types.....	36

Description of CFFDRS FBP System Fuel Types.....	37
Wildfire Behaviour in FBP System Fuel Types Under High Wildfire Danger Level .....	38
Appendix 2 – FireSmart Zones .....	39
Appendix 3 – Fire Resistant Plants .....	40
Appendix 4 – First Nation, Indigenous Communities, and Metis Nations in Alberta .....	42
Example of consultation email .....	45
Appendix 5 – Threat Assessment Worksheet .....	46
Appendix 6 – FireSmart Community Plan Agenda and Meeting Invite - Partners .....	47
Appendix 7 – FireSmart Community Plan Agenda and Meeting Invite – Platoon Chiefs .....	49



Figure 1 Bear Creek Corridor, Fall 2019. Photo: S.E.R. Leverkus, 2019.

*We acknowledge contributions from various departments of the City of Grande Prairie, the generous time and discussion by the Government of Alberta Wildfire personnel, and our team’s peer-reviewers.*

*Citation: Leverkus, S.E.R., Davies, J., Zukanovic, N., Concepcion, R.L., and J. Kostuk. 2019. City of Grande Prairie Wildfire Mitigation Strategy: South Bear Creek 2019. Shifting Mosaics Consulting Plan No. 1902.*

## 1.0 Introduction

Grande Prairie is a bustling city located on the southern edge of the Peace River Region, within the traditional territory of the Dane-zaa/ Dunne za (Beaver people). It was incorporated as a city in 1958 and is strategically situated in northern Alberta (The Canadian Encyclopedia). Grande Prairie is a regional hub and it serves residents from Northwestern Alberta, Northeastern British Columbia, and as far away as the Yukon and the Northwest Territories. It is located at the heart of a regional transportation network. Highway 43 through Grande Prairie is a major 4 lane highway connecting Edmonton with the British Columbia border and the start of the Alaska Highway. Air Canada and WestJet have multiple daily flights from the regional airport. The City's location has contributed to its rapid growth over the years, and the City has developed into one of the fastest growing communities in Canada. The City has a population of just over 69,000 with a broader trading area of over 280,000. The land adjacent to the City is managed by the County of Grande Prairie.

The City of Grande Prairie Parks provide environmental, social and community, and public health, and economic benefits (Sandalack and Associates 2012). Within the City of Grande Prairie there is a natural area known as Bear Creek or the Muskoseepi Park Corridor. Muskoseepi is a Cree word meaning Bear Creek. This corridor runs down the heart of the City from north to south. The Bear Creek is a tributary of the Wapiti River to the south. The south end of the corridor poses the greatest risk from wildfire. The corridor opens and becomes larger south of 68<sup>th</sup> Avenue. The wooded areas are comprised of aspen, tamarack, lodgepole pine, and black spruce. Aquatera is the primary water treatment plant and wastewater treatment plant for the City and region, and has critical infrastructure located in the southern corridor.

There is increasing government and public concern about wildfire especially after the catastrophic fires of Slave Lake, Fort MacMurray, and High Level. This has driven the desire to have a plan in place with options that will address the public concern. The Bear Creek watershed is an important wildlife corridor for moose, black bear, deer, elk, coyote, birds, snakes, and other small mammals. It is an area of human use (walking/hiking, bike riding) and occupancy. Medicinal and traditionally used plants and berries have been collected in the corridor. The Bear Creek corridor and area is of significant pride to the people of Grande Prairie as a wild space within their city.

Throughout the course of this project to date, we have engaged with internal and external project partners. Internal partners to the City of Grande Prairie include the departments of: communications, engineering services, energy management and environmental services, GIS, Parks operations, planning and development.



*Figure 2 The Wildland Urban Interface (WUI) in the south Bear Creek Corridor. Photo: S.E.R. Leverkus, 2019.*



## 2.0 Planning Area and Stakeholders

### 2.1. Planning Area Boundary

#### 2.1.1. Planning Area Boundary

The project area is bordered by 68th avenue (North), Highway 668 (South), Highway 40 (West) and Resources Road (East). It is known as the Southern End of the Muskoseepi Park Corridor.

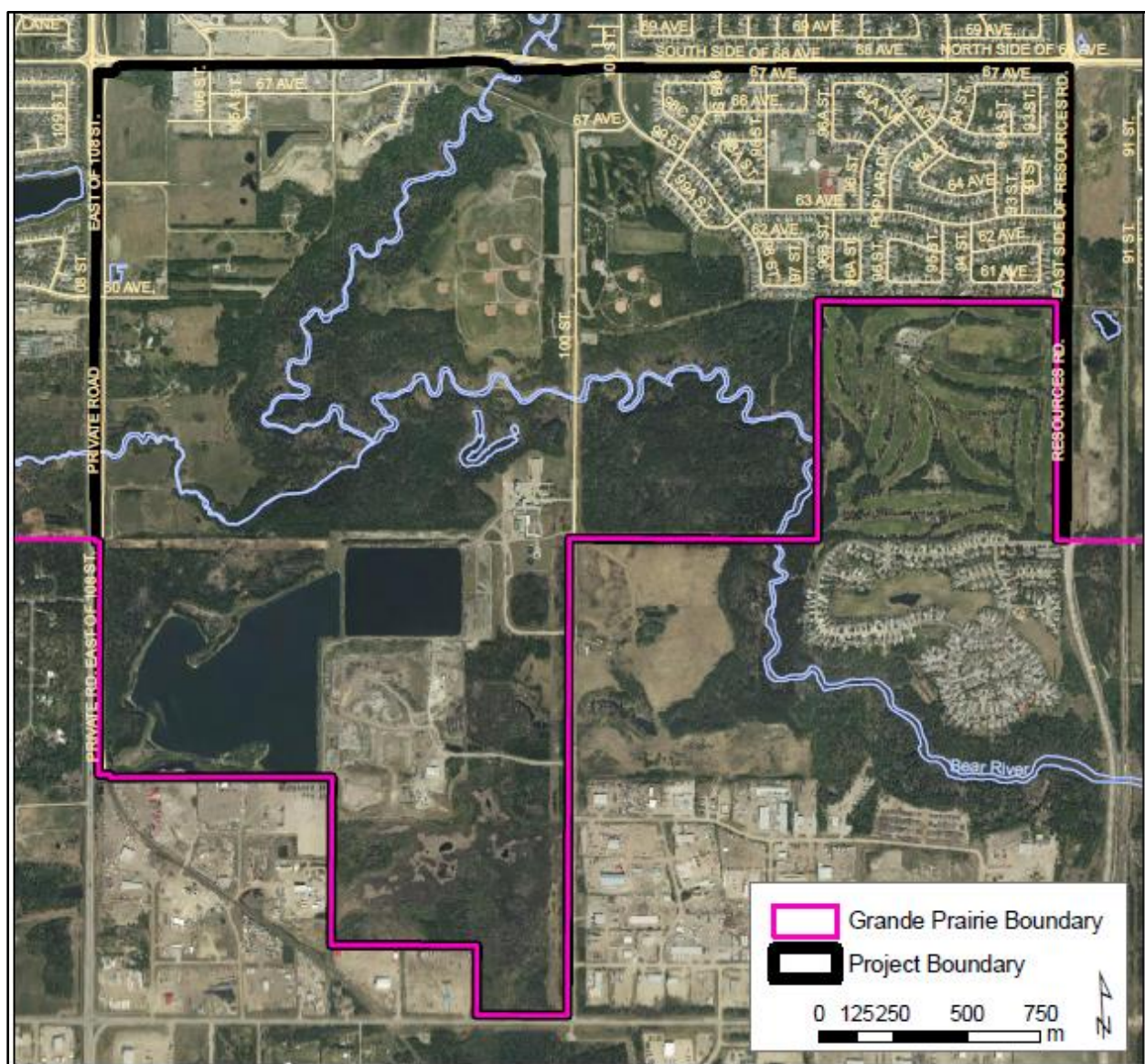


Figure 3 The area of interest for this project is the South Bear Creek area.





*Figure 4 Extensive trail systems offer great recreation value for the people of Grande Prairie. These trails also offer strategic locations to be used as anchor points and/or access should a wildfire scenario occur. They should also be considered for fuel management and treatment programs to prevent human caused ignitions adjacent to the trails.*

## 2.1.2. Stakeholders and Jurisdictional Authorities

Throughout the implementation of this project, we have communicated with stakeholders, jurisdictional authorities, and project partners. We hosted a partner and stakeholder meeting on Monday October 21 2019 where we presented our findings to date on fuel hazard and risk. We documented the concerns expressed at this meeting and integrated them with the considerations and discussion from the meeting with the Platoon Chiefs on Tuesday October 22<sup>nd</sup>, 2019. The meetings were held at the Grande Prairie Pete Eager Fire Hall.

Internal Organization	Contact Name	Phone/Email
City of GP – Engineering Services	Richard Sali	<a href="mailto:rsali@cityofgp.com">rsali@cityofgp.com</a> 780-538-0327
City of GP – Communications	Lydia Sadiq	<a href="mailto:lsadiq@cityofgp.com">lsadiq@cityofgp.com</a> 780-357-8759
City of GP – Energy Management and Environmental Services	Kase DeVries	<a href="mailto:kdevries@cityofgp.com">kdevries@cityofgp.com</a> 780-830-7437
City of GP – GIS	Kent Bowman	780-538-0321
City of GP – Parks Operations	Lindsey Juniper	
City of GP – Parks Operations	Jon Craig	
City of GP – Planning and Development	Dan Whelton	<a href="mailto:dwhelton@cityofgp.com">dwhelton@cityofgp.com</a> 780-538-0419
City of GP – Fire Department	James Kostuk	<a href="mailto:jkostuk@cityofgp.com">jkostuk@cityofgp.com</a> 780-538-0400
City of GP – Fire Department	Steve Larsen	
City of GP – Fire Department	Jake Pruden	
City of GP – Fire Department	Ben Sargeant	
City of GP – Fire Department	Dennis Mossey	
City of GP – Fire Department	Trevor Grant	
External Organization	Contact Name	Phone/Email
Alberta Ministry of Agriculture and Forestry	Mike Kingsbury	<a href="mailto:Mike.Kingsbury@gov.ab.ca">Mike.Kingsbury@gov.ab.ca</a> 780-538-8982
Alberta Ministry of Agriculture and Forestry	Kelly Burke	<a href="mailto:kelly.burke@gov.ab.ca">kelly.burke@gov.ab.ca</a>
Alberta Ministry of Agriculture and Forestry	Gavin Hojka	<a href="mailto:gavin.hojka@gov.ab.ca">gavin.hojka@gov.ab.ca</a>
Aquatera	Ryan Ropcean	<a href="mailto:rropcean@aquatera.ca">rropcean@aquatera.ca</a> 780-357-5943
Alberta Ministry of Environment and Parks	Jessica Lockhart Wildlife Biologist	<a href="mailto:Jessica.lockhart@gov.ab.ca">Jessica.lockhart@gov.ab.ca</a> 780-833-4289
First Nations	Darlene Jona Cardinal Elder	<a href="mailto:Darcar1@telus.net">Darcar1@telus.net</a> 780-832-4375
County of GP	Dan Lemieux	<a href="mailto:dlemieux@countygpc.ab.ca">dlemieux@countygpc.ab.ca</a>
County of GP	Tracy Green	<a href="mailto:tgreen@countygpc.ab.ca">tgreen@countygpc.ab.ca</a>
Consultants	Contact Name	Phone/Email
Shifting Mosaics	Dr. Sonja E.R. Leverkus	<a href="mailto:shiftingmosaicsconsulting@gmail.com">shiftingmosaicsconsulting@gmail.com</a> 250-321-7069
Frontline Operations Group	John Davies	<a href="mailto:john@frontlineops.ca">john@frontlineops.ca</a>



Additional communication with stakeholders and other knowledgeable professionals included:

- Lisa Rehaluk – Arborist – Lead Hand, City of Grande Prairie Parks Operations
- Sarah Kaut – Aquatera [skaut@aquatera.ca](mailto:skaut@aquatera.ca)
- Jennifer MacAlister – City of Grande Prairie GIS [jmacalister@cityofgp.com](mailto:jmacalister@cityofgp.com).



*Figure 5 Some areas along the south Bear Creek corridor have high potential for fire spread during the spring dip when grasses and fuels are dry before the green-up. Photo: S.E.R. Leverkus, 2019.*

### 2.1.3. Biophysical Description

Grande Prairie is located in the Peace River Parkland Subregion which is bordered in the north by the Lower Foothills Subregion and by the Dry Mixedwood Subregion in the south (Sandalack and Associates 2012). Much of the area to the north of Grande Prairie includes cultivated uplands with pre-settlement perennial grasslands (Sandalack and Associates 2012). There are upland forests of aspen and white spruce found amongst dry grasslands and aspen forests on valley slopes (Sandalack and Associates 2012). Within the South Bear Creek Corridor there is a range of vegetation cover including spruce stands, aspen and cottonwood, woody shrubs, and open grass. In locations where the forest canopy is minimal or non-existent (ie. under powerlines, along trails, along the creek corridors, etc) there is a high abundance of grasses and forbs. This high surface fuel load in the open areas could provide easy ignition potential and/or act as a wick for fires to spread into the south Bear Creek Corridor and beyond. Some landslides and geomorphological events continue to occur along the Bear Creek Corridor.

Several species of trees within the region and within the city are experiencing disease. This includes a fire blight outbreak (apples, hawthorns, mountain ash) where the tips of branches look burned (bacteria), Bron's birch borer (birch), and black knot (cherry trees). As a result, certain impacted trees have been topped and modified for bird habitat within the City Parks (Pers. Comms. Lisa Rehaluk – Parks Arborist). The decision was made to retain these trees with modifications so that if they were to fall, they would not harm anyone – the trees will remain topped like this until they fall or if they become leaners they will be removed. If trees are within striking distance to a target (ie. buildings, walking paths, picnic tables, places where public would congregate or pass through) they are typically removed.

If the area allows access for a tree trim truck and chipper, the debris is mulched and removed from site. If there is no or limited access, some of the material is hauled away with a pick-up and the remaining material is dispersed through the natural stand.

The wind direction is predominantly northwest most of the year (Sandalack and Associates 2012), however, wind direction in the month of May is typically from the southeast. The interaction of this wind with dry arctic air has contributed to conditions resulting in catastrophic wildfires in Alberta (Pers. Comms. G. Hojka 2019). While this type of wind may only last for a few days, the relative humidity often dips below 20% at the same time as spring dip (Pers. Comms. G. Hojka 2019).

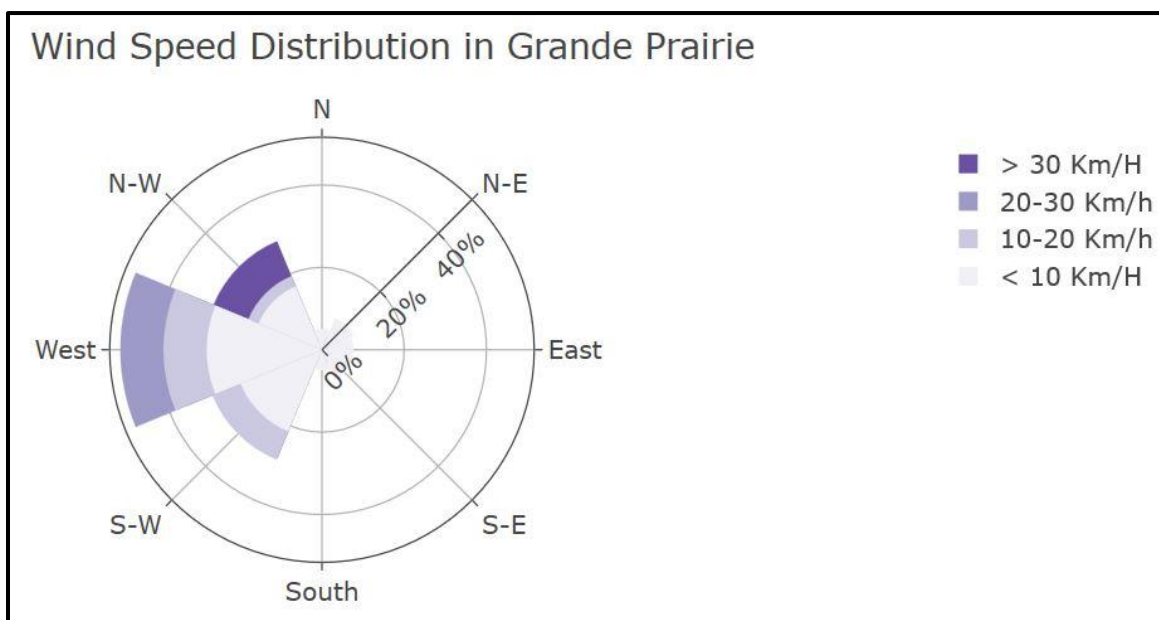


Figure 6 Wind speed distribution in Grande Prairie highlights the dominant winds from the west with higher windspeeds from the northwest.

## 2.2. Planning Strategies and Integrated Planning

### 2.2.1. The County of Grande Prairie No. 1 Wildfire Mitigation Strategy

The County of Grande Prairie No. 1 Wildfire Mitigation Strategy (2015) reported that “the highest risk area in the County is the wide strip of crown land just north of the Wapiti River between Bear Creek and Spring Creek. This area has the heaviest concentration of mature pine and was the area most heavily infested with the Mountain Pine Beetle. It is also the area used mostly for a variety of recreational activities including ATVs and has the heaviest concentration of rural subdivisions. Due to these factors, this is the area that has the highest priority for the County and AF for FireSmart fuel management projects in order to reduce the overall fire hazard and risk.” The County of Grande Prairie did complete some fuel management treatment in this area over the past several years. Additionally, it was reported that Wedgewood Estates had low on-site fire risk with moderate adjacent fire risk potentially due to the dominance of spruce and wood shakes on roofs.

### 2.2.2. Aquatera Wildfire Preparedness Guide for the Grande Prairie Assets

Quintilio et al. (2018) reported that “The Bear Creek valley to the north (of the Aquatera site) has scattered white spruce fuels along the slopes to the top of the breaks where aspen becomes the dominate species. The aspen fuels have a low density of white spruce beginning to develop in the understory, especially in the aspen area to the east of the Treatment Plant Administration building access. This white spruce will transition the aspen fuel type to a mixed wood fuel type over time, increasing the wildfire threat. Throughout the area to the south, west and southeast up to secondary road 668 the fuels are broken up by various industrial parks. South of secondary road 668 to the Wapiti River, there has been extensive Mountain Pine Beetle cutover removal (past 5+years) along with FireSmart mitigation.” They also state that a “high risk area is along the Bear Creek Valley creating a wildfire risk to the plan site facilities (Quintilio et al. 2018).”

### 2.2.3. The City of Grande Prairie Parks and Open Space Master Plan

The City of Grande Prairie Parks and Open Space Master Plan (Sandalack and Associates 2012) provides guidance around development and improvement of parks and the retention and enhancement of the character and quality of existing landscape elements and open spaces. In particular, it is stated that the Muskoseepi Park is a backbone of the plan and that subsequent development should support protection of the ecosystems and ecological processes occurring within it.

### 2.3.4. Mowing Schedule

According to Jonathan Craig of the City of Grande Prairie, the mowing schedule for 68<sup>th</sup> Avenue and South includes:

- “all grass areas from 68 Ave and south are mowed once a week
- larger tractors do the steep areas once a month
- mowing is weather dependant therefore it may be more or less
- the furthest south parking lot is the boundary to where mowing stops and everything from that point south is all naturalized
- sometimes trimmers are sent into the natural walking trails to clean up the edges along the trails”



Figure 7 South Bear Creek Corridor, Fall 2019. Photo: S.E.R. Leverkus, 2019.



### 2.3. First Nation Consultation

The City of Grande Prairie is developing their process around consultation with First Nations, Indigenous Communities, and the Metis Nation. At the time of this project, the only known archaeological feature and area of cultural significance is the grave site on the east side of Resources Road which is outside of the project area. In order to gain a better understanding and to include First Nations and Indigenous Communities in this project, Fire Marshal Kostuk attempted communication with local First Nations and Indigenous Communities. Invitations were extended to participate in the initial stages of this project and to attend the project meetings. Fire Marshal Kostuk contacted the following First Nations and Indigenous Communities for participation in this project with response and participation by Elder Darlene Cardinal:

1. Shannon Dunfield Manager  
Indigenous Health, French Health & Diversity PPH - North Zone Alberta Health Services  
Marge Mueller, NW Regional Manager NCSA
2. Kelly Benning
3. Elder Darlene Cardinal

Elder Darlene Cardinal attended the partner meeting held on October 21<sup>st</sup>, 2019 and shared much traditional and cultural knowledge during the session.



*Figure 8 Medicinal and traditionally used plants and berries are harvested in the Bear Creek area. Photo: S.E.R. Leverkus 2019.*

## 3.0 Hazard and Risk Assessment

### 3.1. Values-At-Risk

#### 3.1.1. Structural

Structural values surround the South Bear Creek corridor on all sides ranging from individual residences to dense neighbourhoods, and from light and heavy industrial facilities to commercial buildings. Additionally, Aquatera, a private business that operates the wastewater treatment facility for the City, is located in the center of the South Bear Creek corridor and would be considered critical infrastructure given its functional importance to the local governments.

Other noted infrastructure of concern would be the major highways that transit immediately adjacent to the subject area. These are routes that could potentially be rendered unsafe for travel in the event of a large scale wildfire within the adjacent stands. Powerlines and power poles were identified as critical infrastructure to be protected particularly in the event of a surface fire (grass fire).

#### 3.1.2. Ecological

The intermix nature of the forested stands within the corridor support a wide diversity of species. There are widespread occurrences of deciduous wildlife trees, the presence of understory vegetation ranging from moss to deciduous shrubbery to grass complexes and a diverse range of age classes of coniferous species. Some of the stands within the south Bear Creek corridor were noted to be getting near the end of their life and that the fuel in the understory could carry a fire. There have been locations where trees have been removed or have been mulched or chopped and left on the ground. Some coarse woody debris is beneficial as long as it is in moderation and not contributing to fire hazards.

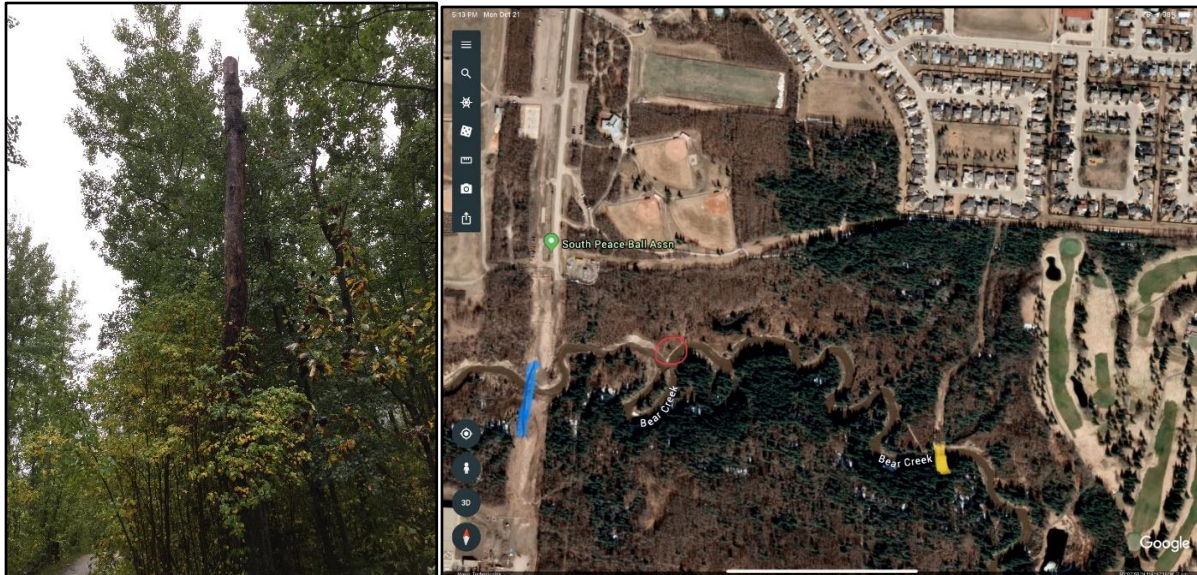
D. Cardinal shared that rose, birch, cranberry, and saskatoon are important medicinal plants traditionally used and which have been often harvested in the Bear Creek area. She expressed concern that First Nations and Indigenous Peoples have been practicing fire management all their lives but that they no longer do it. She shared that they used to take dry twigs and branches, gathered from the forest, to help start controlled fires – in essence, this was the original FireSmarting and fuel treatment of the land and taking care of the landscape. If they were to continue doing this today, they would be charged.

Other ecological considerations were brought forward during the partner and stakeholder engagement sessions highlighting further the concern for the ecological integrity of the Bear Creek corridor balanced with the protection of life and property should a fire event occur. Residents do not want to lose their homes to a wildfire event, but they also do not want to have high intensity fuel treatment that could result in negative impacts to wildlife and its habitat.

Additionally, the Aquatera riparian interface provides a unique habitat extending for the full length of the subject area. A diverse mosaic of vegetation cover supports multiple species including black bear, deer, elk, moose, furbearers such as squirrels, beaver, and coyotes, and a plethora of songbirds such as robins, woodpeckers, owls, and potentially migratory birds such as ducks and other waterfowl. It is unknown which species of fish may or may not be present, however, ensuring properly functioning



riparian ecosystems is critically important in this corridor to support the abundance of resident wildlife present and living in the corridor along with migratory wildlife that migrate throughout the area. Snakes and their potential hibernaculum have been reported in the area (Figure 9) and are of ecological concern for residents. Fuel treatment would not be recommended within the riparian area so that riparian values may be conserved.



*Figure 9 Nesting and perching habitat is an important feature in the Bear Creek corridor (L) along with potential snake hibernaculum (red circle) (R).*

Human presence within the south Bear Creek corridor is fairly consistent with recreational users and urban camping. There have been some small urban camper fires and youth fires that have then spread to 5 to 10 trees and have also spread to the train trestle and other areas. In the Muskoseepi area there are periodically medium to high risk times for fire to ignite with events occurring in the area (note: Canfor log pile fire, train trestle fire). There have been fires in areas adjacent and in proximity to the Bear Creek corridor such as the one at a farm residence on Highway 668, west of Highway 40.

Ignitions caused by humans in this area could potentially result in significant impacts. Throughout the area, there is light, flashy fuels next to conifer stands. These fuels are easily ignited and can carry fire, therefore, particular attention to the trail system and adjacent fuels could be an important key to successfully reducing human ignitions.



### 3.2. Hazard Assessment

In 2016 an initial high-level visual assessment of danger trees, hazards, and risk was conducted in the South Bear Creek area by the City of Grande Prairie Fire Department James Kostuk –Fire Marshal and Parks Department Lisa Rehaluk – Parks, Arborist. The Bear Creek Corridor was divided into six (6) distinct areas with an associated risk ranking as indicated on Figure 10. The highest risk areas were identified in the south Bear Creek area by J. Kostuk and L. Rehaluk as follows:

#### 3.2.1. Grande Banks/South Bear Creek Area/ 68<sup>th</sup> Avenue to south

##### **Area 1 - High Risk**

- 10-20 meters from house to tree line (back of property) Grande Banks.
- Residential homes at Creek Bank Upper Slope.
- Moderate deadfall and standing dead trees in natural areas.
- Mostly deciduous trees.
- Tall standing grasses along trails.
- Pockets of Coniferous trees (thick pine/spruce trees).
- Creek bank slope along north Aquatera boundary.
- Aquatera critical infrastructure (water).
- Adjacent to County of Grande Prairie.

#### 3.2.2. Country Club/South Bear Creek Area/ 68<sup>th</sup> Avenue to south

##### **Area 2 - High Risk**

- 15 metre grassed area (Lawn) from forest line to fence line. 10 metres from fence line to house. location. Buffer well maintained from 67<sup>th</sup> Ave to Grande Prairie Golf Course.
- Buffer well maintained from 68<sup>th</sup> Ave to GP golf course. Mowed once per month by parks department.
- Minimal dead trees (1 tree in the area), area has been assessed by City tree crew and dead trees have been removed from the natural area (along the Golf Course).
- Adjacent to County subdivision Wedgewood.
- Primarily deciduous with less than 10% conifer.
- Pockets of Coniferous trees (thick pine/spruce trees) at southern boundary.
- Adjacent to County of Grande Prairie. Forest extends along bear creek to Dunes area.

#### 3.2.3. 68<sup>th</sup> Avenue to 72<sup>nd</sup> Avenue

##### **Area 3 - High Risk**

- Corridor on west side of bear creek.
- 10-20 meters from house to tree line (back of property).
- Residential homes at Creek Bank Upper Slope.
- Moderate deadfall and standing dead trees in natural area.
- Primarily deciduous with less than 10% conifer.
- Tall standing grasses along trails.
- Clean up fallen trees/deadwood from forest floor.

- Park trail system is wide enough to bring in City Chipper that would allow chipping of trees to 18" diameter. Lots of manpower would be required. Chainsaws and safety equipment would be needed.

### 3.2.4. 72<sup>nd</sup> Avenue to Michaels Boulevard

#### **Area 4 - High Risk**

- Corridor on west side of bear creek.
- 10-20 meters from house to tree line, with utility lot buffer in between.
- Residential homes at Creek Bank Upper Slope.
- Moderate deadfall and standing dead trees in natural area.
- Primarily deciduous with less than 10% conifer.
- 72A Ave cul-de-sac (3 houses) with 0-meter buffer between back of property and tree line (High Risk).
- 7625-102 St, deck built right into tree line. Aspen trees within 1 meter of rooftop. Roof is covered with cedar shakes (High Risk).
- Coachman Village and east side of Bear Creek has long grass west of trailer park that needs to be trimmed down.
- Pockets of dead standing trees south of 84 Ave, around wetland area. Access for removal would be tricky.
- Tall standing grasses.
- Areas with dead trees/or fallen debris would take a couple days to clearout (cut down) and chip up debris. (So > 20 hrs x 5 tree maintenance techs + equipment).

### 3.2.5. Mission Heights, Michaels Boulevard to 84<sup>th</sup> Avenue

#### **Area 5 – Low Risk**

- Includes corridor on East and West side of Bear Creek.
- Deadfall and debris clean-up of pile approximately 3 hrs @ \$275/hr.
- Residential homes at Creek Bank Upper Slope.
- Area between coachman village trailer park and East bank of bear creek has long tall standing grasses.
- Does not have regular mowing program.
- Primarily deciduous with less than 10% conifer.
- Homes on west side of creek have steep embankment leading onto properties.
- Pockets of dead standing trees in wetland area on East side of trail. Appears to be a perceived risk from visibility from roadway. Access would be difficult to remove if it was required.

### 3.2.6. Swanavon (84<sup>th</sup> Avenue to 100<sup>th</sup> Avenue) – Eastside

#### **Area 6 – Moderate Risk**

- All residences along 102<sup>nd</sup> St within 0-10 meters of tree line.
- Residential homes at Creek Bank Upper Slope.
- Steep embankment with no access to provide mitigation.
- Several pockets of dead trees throughout park area.

- Primarily deciduous with less than 10% conifer.
- One week's worth of work at the least to remove dead tree areas.
- Would need to cut, drop and drag wood out.
- Limited access to areas to clean-up. Would not be able to drive large tree truck and chipper.

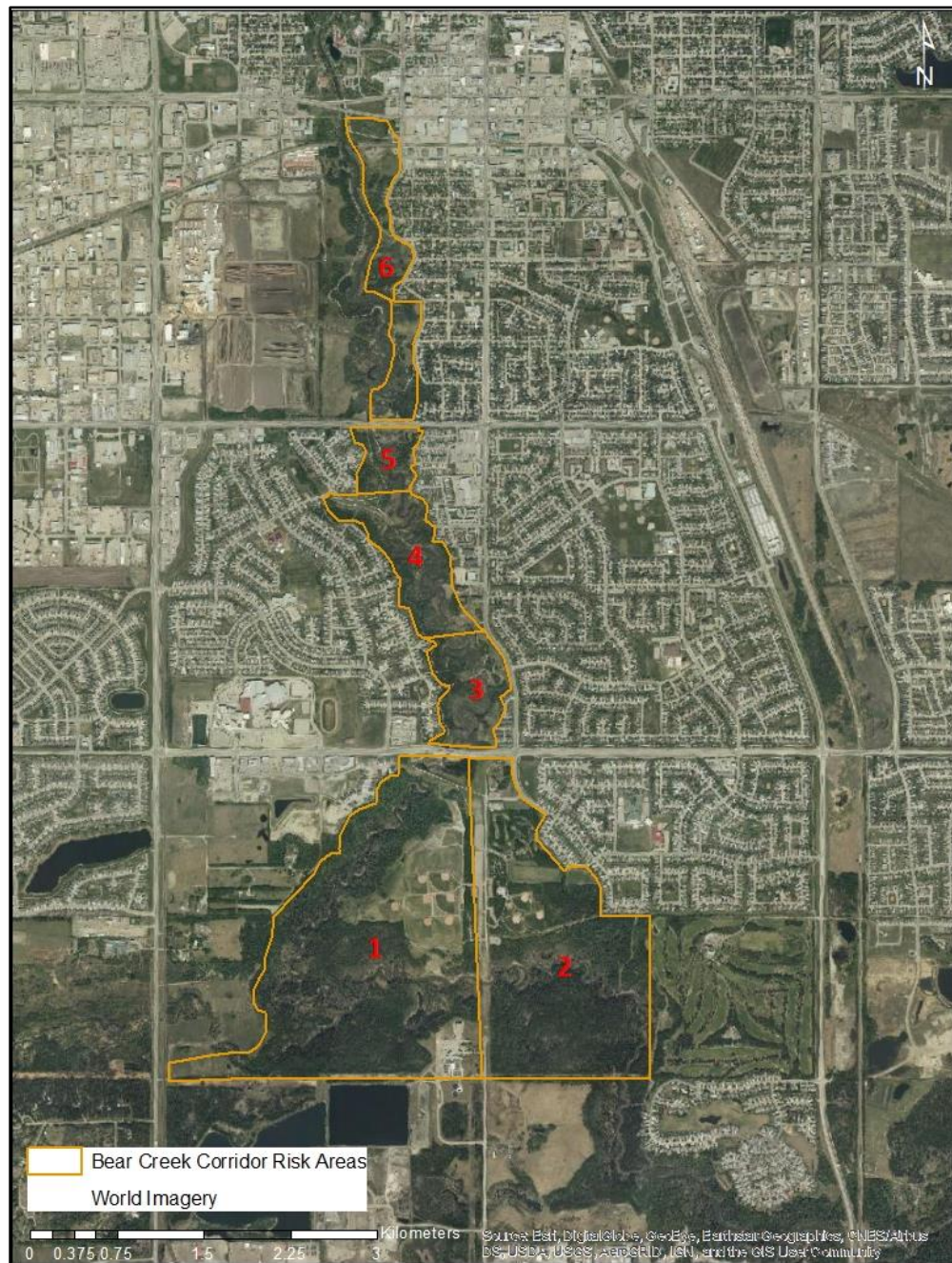


Figure 10 Hazard assessment and risk ranking occurred in the six (6) distinct areas within the Bear Creek Corridor defined by J. Kostuk and L. Rehaluk.



### 3.3. Risk and Hazard Assessment

#### 3.3.1. Fire Behaviour Analysis Methodology

We developed a model to analyse weather, fuel type, and fire behaviour in the South Bear Creek area based on the 80<sup>th</sup> percentile from May-Sept for fire behaviour (Fine Fuel Moisture Code and Build Up Index). The following is an overview of the Fire Behaviour Analysis GIS methodology.

The Wildfire Risk Analysis (WRA) is a GIS-based model that spatially quantifies and analyzes the relationships that exist between the critical factors affecting wildfire threat. The intent of the analysis is to provide planners with a decision-making tool to spatially identify the risk at the landscape level. This information allows planners to analyze and explore the implications of different management activities in relation to wildfire risk.

The overall rating spatially expresses wildfire threat by incorporating three key components, with specific weightings, as follows:

Fire Intensity - 50%

Rate of Spread - 25%

Crown Fraction Burned - 25%

These three components are in turn calculated from contributing factors, or sub-components, each of which is represented by a layer in GIS. The layers representing these three components are subsequently overlain to produce the final wildfire threat rating.

#### **Fire Behaviour**

The fire behaviour of the WRA measures how wildfire will behave under extreme weather conditions. The Canadian Fire Behaviour Prediction System (FPB) provides quantitative outputs of selected fire behaviour characteristics for the major Canadian fuel types.

#### **Fuel Types**

Seventeen national benchmark fuel types, which are divided into five categories, are used by the Canadian Fire Behaviour Prediction System to forecast how wildfire will react. These fuel types were defined using the forest inventory and guidelines developed by the BC Ministry of Forests, Lands and Natural Resource Operations. Six fuel types were identified in the study area. It is important to note that these fuel types represent a type of behaviour pattern and their names are generic and do not accurately describe the type of stand itself.

#### **Weather**

Weather conditions used to calculate fire behaviour were derived from historic government records for two weather stations within the area. This weather data was compiled and statistically analyzed to determine the average 80th percentile fire weather indices for the months of May to September.

## Topography

Topographical attributes required to predict fire behaviour include slope and aspect. The study area was delineated into polygons based on slope breaks of 10% intervals and aspects of 45 degrees. The cardinal wind direction was calculated from the aspect so that it was blowing upslope and the elapsed time was set at 24 hours.

All of the data pertaining to fuel types, topographical attributes, and fire weather was compiled for the entire study area. This information was then run through the modeling software (Remsoft FPB97) to create the three output fire behaviour layers: fire intensity, rate of spread and crown fraction burned.

## Fire Intensity

This layer is a measure of the rate of heat energy released per unit time per unit length of fire front and is based on the rate of spread and the predicted fuel consumption. The units for this layer are kilowatts per meter.

## Rate of Spread

This layer is a measure of the speed at which a fire extends its horizontal dimensions. It is based on the hourly Initial Spread Index (ISI) value and is adjusted for the steepness of slope, the interactions between slope and wind direction and increasing fuel availability as accounted for through the Build Up Index (BUI). The units for this layer are meters per minute.

## Crown Fraction Burned

This layer is a measure of the proportion of tree crowns involved in the fire. It is based on the rate of spread, the crown base height and the foliar moisture content and is expressed as a percentage value.

Layer	Units	Unit Value	Weight
Fire Intensity	Kilowatts per meter (kW/m)	>0-500	4 – Very Low
		501-1000	8 – Low
		1001-2000	10 – Low
		2001-4000	12 – Medium
		4001-10000	16 – Medium
		10001-30000	18 – High
		>30000	20 – Very High
Rate of Spread	Meters per minute (m/min)	>0-5	2 – Very Low
		6-10	4 – Low
		11-20	6 – Medium
		21-40	8 – High
		>40	10 – Very high

Crown Fraction Burned	Percent of canopy crown burned (%)	0	0 – None
		1-9	3 – Low
		10-49	6 – Medium
		50-89	
		90-100	8 – High 10 – Very high

### Fire Behaviour Rating

The weightings of the input layers were designated as follows with a total maximum value of 40 and categorized into “threat” categories as follows:

Layer	Weight
Wildfire Threat	0 Very Low
	1-19 Low
	20-25 Moderate
	26-30 High
	31-40 Extreme

It is important to note that fire intensity, rate of spread, and crown fraction burned are also determined by fuel type. A note of caution regarding the methodology that was used in this analysis is that there may be an underestimation of fire behaviour and potential in the grass fuel type (01b).



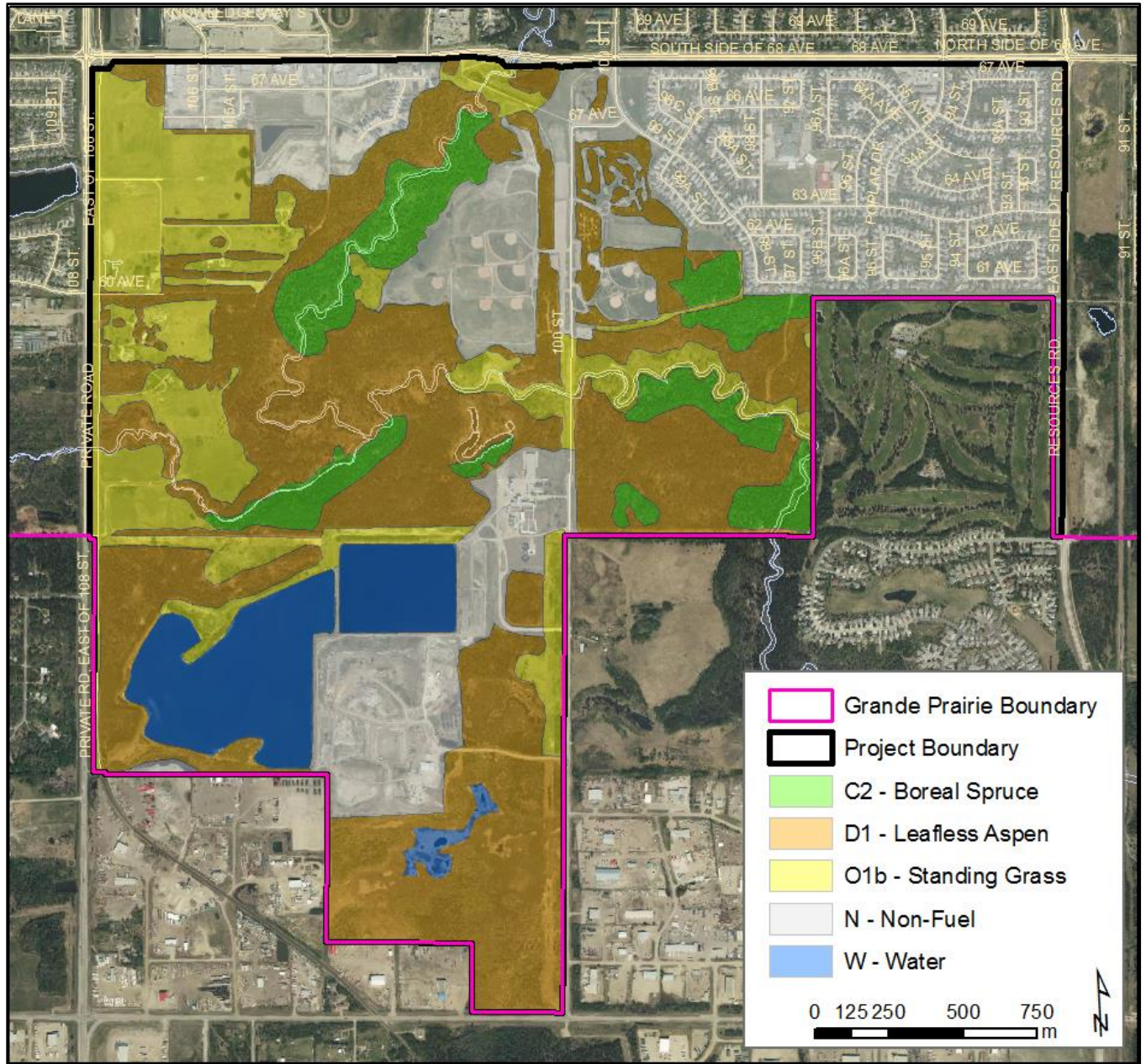


Figure 11 Fuel types for South Bear Creek within the project boundary include boreal spruce (C2), leafless aspen (D1), standing grass (O1b), non-fuel, and water..



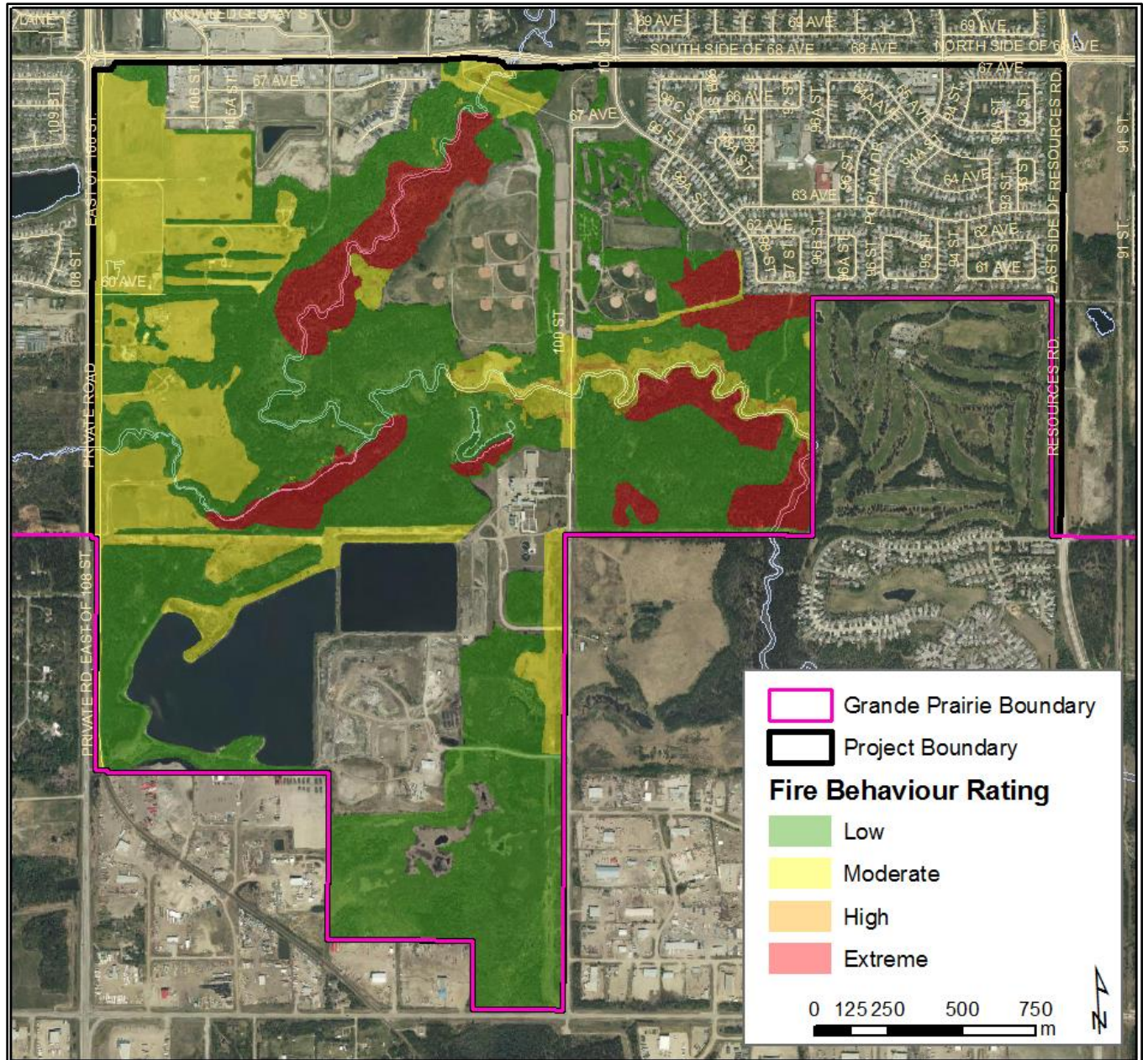


Figure 12 Fire behaviour results indicating greater fire behaviour in the red polygons.



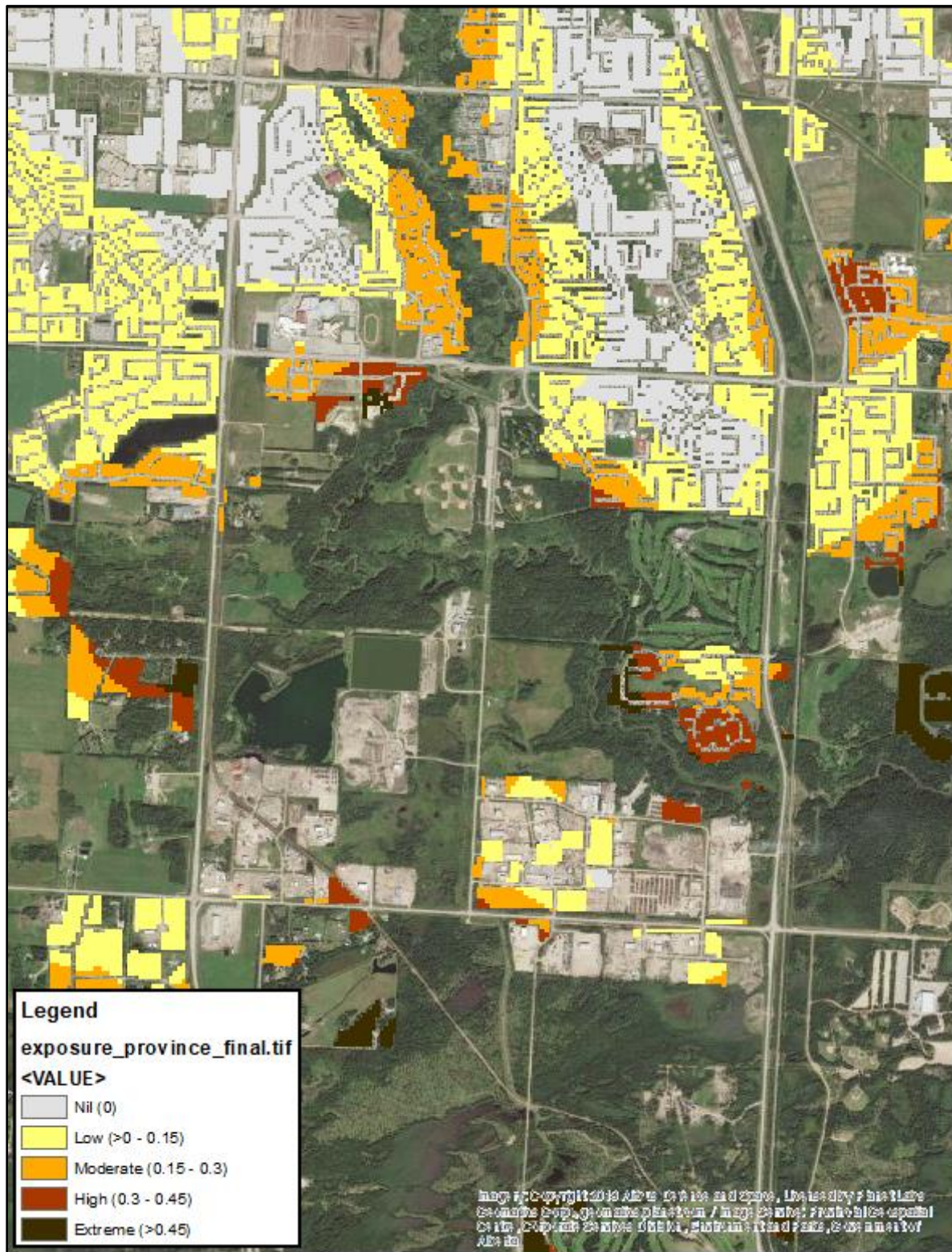


Figure 13 Exposure layer per Beverly et al. 2010 from G. Hojka (<http://wildfireanalytics.org/fire-risk.html>).



## 4.0 FireSmart Activities

### 4.1. Education and Communications Options

#### 4.1.1. Present Initiatives

This Plan is the first step towards the City of Grande Prairie's FireSmart initiatives.

#### 4.1.2. Communication Plan

There is a communications expert with the City of Grande Prairie who is interested and able to assist in developing a communication plan regarding FireSmart activities that homeowners and neighbourhoods can do together. Following the steps outline on p. 36 of the FireSmart Guidebook will assist greatly with the communication plan.

#### 4.1.3. Recommendations

- a. Provide outreach materials to the public in relation to FireSmart initiatives for their homes including the replacement of cedar shakes with shingles or other less flammable materials
- b. Develop FireSmart signage to decrease potential anthropogenic ignitions
- c. Public education especially during periods of heightened fire danger
- d. Distribute and display FireSmart materials at trailheads, parks facilities, and community events
- e. Host FireSmart workbees
- f. Host an open house at the local fire stations with FireSmart information
- g. Consider the recommendations on p. 35 and 65 of the FireSmart Guidebook



*Figure 14 Human ignition sources were observed throughout the site visits in the field. In this case, a cigarette (red circle) had been tossed in the grass which could have resulted in a fire if the conditions were drier. Photo: S.E.R. Leverkus 2019.*

## 4.2. Vegetation Management Options

### 4.2.1. Existing Fuel Management Activities

In 2011 20 Jr. Forest Rangers completed some clearing work in the South Bear Creek area. Sheep grazing has occurred along 84<sup>th</sup> Ave and along the corridor, primarily targeting invasive species (Canada thistle and huge infestations of common tansy were observed at almost every location visited during the site visits). There was good public acceptance and support for the grazing program.

### 4.2.2. Proposed Fuel Management Prescriptions

Treatment options have been presented in the following pages of this Plan. We suggest that a local forester could write the prescriptions that meet the guidelines we have set out but are in accordance with Alberta as it pertains to laws and standards in Alberta. It is important to note that maintenance of fuel treatment and fuel breaks should be ongoing.

### 4.2.3. Recommendations

Reducing hazardous fuel results in safer areas to fight fire from, provides fuel breaks, and provides anchor points for suppression actions. Crown separation in conifer fuel types is recommended so that fire will drop from the canopy to the ground where it can be more readily actioned. This also allows for greater potential for success of aerial suppression actions. Additionally, the reduction of small fuels and ladder fuels is likely to prevent fire from gaining access to the crown. Ember showers and ember transfer from fire events outside of the south Bear Creek corridor are not within the scope of this plan, but there does appear to be potential for this type of fire ignition from the area south of Grande Prairie. The trail system in the Muskoseepi Park (Figure 15) and to the south of the Park offer good potential as fire breaks and anchor points along with ignition and/or containment lines. In addition, we suggest the following recommendations for implementations in 2020 and beyond:

- a. Grass mowing within the project area is important. There is significant acknowledgement that grass is a hazard, primarily during spring dip and post growing season as it can both serve as a quickly ignited fuel for ignition sources and as a wick for fire to move from one area into another. Continuing the mowing program is critical for managing the grass fuel type.
- b. Options to reduce fire risk and fire behaviour in the grass fuel type include:
  - implementing a prescribed fire program which could be followed by grazing
  - implement a livestock grazing program (sheep have already been successful and publicly accepted for vegetation management in the City of Grande Prairie)
  - consideration of other uses of these areas such as agriculture ie. growing crops or vegetables, community gardens, or medicinal plants and berries. Note p. 38 of the FireSmart Guidebook.
- c. Maintain a conifer-free understory.
- d. Prevent ladder fuels from establishing via conifer removal. This will keep crown fire from initiating by removing ladder fuels.
- e. Continually maintain fuel breaks in low fuel loading condition.

- f. Monitor fuel breaks for fuel loading and re-assess fire behaviour annually.
- g. Powerline protection/Power poles: There is a need to have further discussion around protection of power poles from fire. This could be achieved through a combination of mowing, grazing, and prescribed fire.

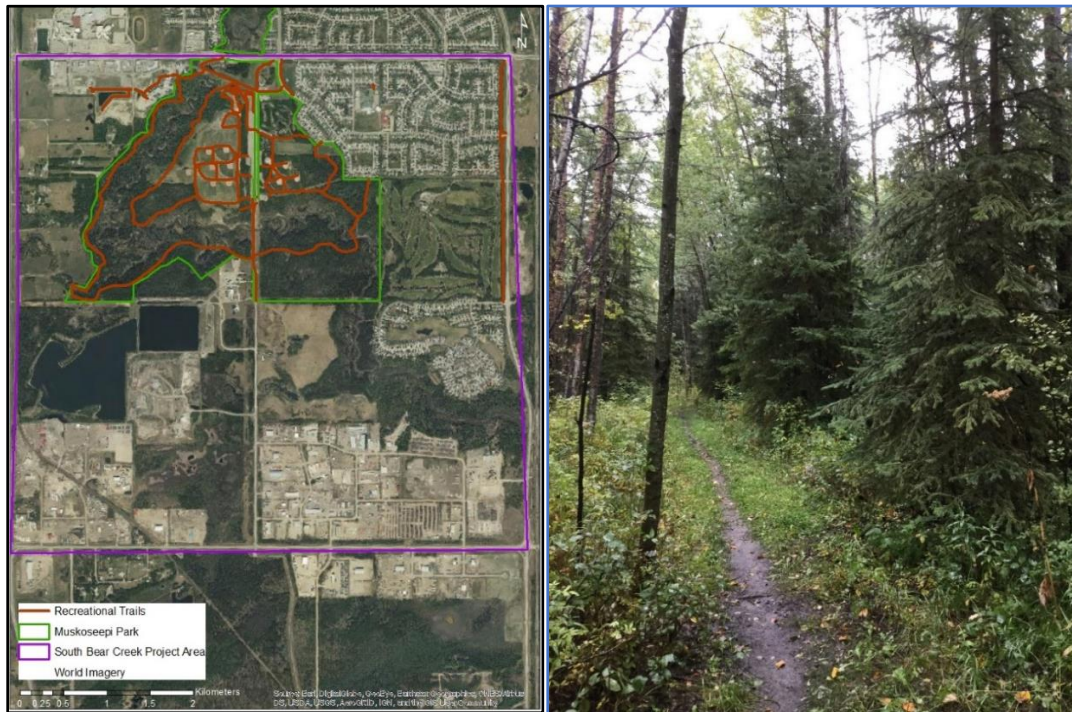


Figure 15 Vegetation management alongside of trails and pathways (L) could reduce the potential ignition and spread of fire as well as provide anchor points for suppression actions. Photo: S.E.R. Leverkus, 2019.

## 4.3. Legislation Options

### 4.3.1. Local Legislation, Policies, and Plans

There are covenants that exist in certain neighbourhoods which call for cedar shakes to be used as roofing material. This should be re-visited as cedar shakes are highly flammable and are susceptible to ember showers from adjacent areas.

### 4.3.2. Municipal Planning Bylaws

The Municipal Development Plan needs to have FireSmart analysis and guidelines within it along with Wildfire Development Areas and protocols.

### 4.3.3. Other Plans and Policies

The County of Grande Prairie completed a Wildfire Mitigation Strategy in December 2015. Aquatera completed a Wildfire Preparedness Guide for their Grande Prairie assets in March 2018. In 2012, The





City of Grande Prairie Parks Department completed the Parks and Open Space Master Plan. All three of these Plans have been reviewed and are referred to within this Plan.

#### 4.3.4. Recommendations

- a. Integrate FireSmart principles and planning protocols in the City Plans, Land Use Bylaws, Development Plans, Covenants, and Subdivision, Engineering, and Development Standards.
- b. Complete structural assessments for roofing materials and home ignition zone assessments.
- c. Integrate results from structural assessments and home ignition zone assessments into this Mitigation Plan and update the Preparedness Guide.

### 4.4. Development Options

#### 4.4.1. Structural Options

Structural values surround the South Bear Creek corridor on all sides ranging from individual residences to dense neighbourhoods, and from light and heavy industrial facilities to commercial buildings. Roofing material varies throughout the neighbourhoods, but it should be noted that there are many cedar shake roofs in the Country Club area. In fact, cedar shakes were found to be present in many neighbourhoods.

#### 4.4.2. Infrastructure Options

Adequate water supply is integral for protecting community assets in a wildfire scenario.

#### 4.4.3. Recommendations

- a. Covenants need to be advised of FireSmart roofing materials.
- b. FireSmart Analyses needs to be completed before neighbourhood plans are started.
- c. Cedar shakes are an available fuel in a wildland fire scenario. It is recommended to replace cedar shakes with appropriate roofing such as tiles, clay, or tin. This could be achieved through financial or tax incentives, bylaws that require new roofs to be of a FireSmart or NFPA approved material or through home insurance incentives.
- d. Complete FireSmart and home ignition zone assessments on existing structures including roofing materials, exterior siding, vents, and landscaping.
- e. Results of FireSmart and home ignition zone assessments should be incorporated into this Mitigation Plan along with updates to the Preparedness Guide.
- f. Verify that proper water supplies exist for all neighbourhoods and subdivisions.
- g. Ensure flammable materials and dangerous goods are appropriately marked and identified.

### 4.5. Interagency Cooperation and Cross Training Options

#### 4.5.1. Present Initiatives

There exists three mutual aid agreements in place: Emergency Management Aid Agreement (2013), Emergency Resource Agreement with Partners (Northwest Alberta Emergency Resource Agreement), and the Mutual Aid Fire Control Plan (2018). In addition to these agreements, there has also been discussion about collaboration for pre-season emergency management for the fire season.

#### 4.5.2. Recommendations

We recommend conducting pre-season emergency management scenarios amongst the response agencies that will be involved in the event of an emergency. The Hinton Training Centre has conducted these types of pre-season scenarios for multi-agency emergency management which allows for trial runs and to determine if there remains any pinch points or weaknesses in the processes and/or procedures. We recommend practicing the process of emergency response in the event of a fire from several directions (ie. from the north, south, west, and east), documenting the challenges that remained, and then incorporating pertinent information into this Plan and the Wildfire Preparedness Guide.

We recommend confirming resources and continual dialogue with Alberta Wildfire. This includes confirmation for the potential to offer air attack support and sustained action crews. Continual communication with the project partners (internal/external) to the City of Grande Prairie is important.

An excellent cross training opportunity and exercise would be doing a fire school for the project partners and others interested in learning about fire. Participants would learn the basics about fire suppression including fire behaviour and fire ecology in addition to knowledge about prescribed fire and the important role that fire plays on the land. Note: the FireSmart Guide for Community Protection p. 56-60. The participants from this training could then collaborate with fire professionals to implement a prescribed fire program for the City of Grande Prairie.

### 4.6. Emergency Planning Options

#### 4.6.1. Present Initiatives

There has been discussion about collaboration on pre-season emergency management scenarios and planning, however, there does not exist a confirmed commitment amongst agencies to date.

#### 4.6.2. Recommendations

We recommend completing an exposure assessment using the techniques defined by Beverly et al. (2010) <https://wildfireanalytics.org/fire-risk.html>.

We also recommend completing a GIS analysis of spotting and ember shower potential distances to determine the 2km radius for spotting and to then add this layer to the GIS database at the City. This would be used to establish a Wildfire Development Permit Area within which bylaws would direct all development towards following FireSmart guidelines with regards to construction and landscaping.

### 4.7. Funding Options

#### 4.7.1. Recommendation

Pursue funding opportunities for: structural assessments of homes (ie. roofing materials and ember shower interactions, full exposure assessment), broader wildfire mitigation/preparedness planning for the rest of the City, fuel treatment and fuelbreak prescription and implementation, annual reviews.

## 5.0 Implementation and Maintenance Plan

### 5.1. Fuel Breaks 1-4

Maintain these fuel breaks in a state of low fuel hazard through mowing or grazing or prescribed fire and grazing regime pre- and during fire season (recommended twice a year based on vegetation growth during the growing season). This will help reduce the risk of ignition and surface fire intensity in the event of an ignition.

### 5.2. Fuel Treatment Units 1 & 2

Prescriptions should focus on treating the three fuel layers: crown, ladder and surface fuels. Overstory retention should be low enough to not allow a crown fire to readily move through the stand. Ladder fuels should be removed to prevent crown fire initiation within the stand and surface fuel loading should be reduced to a low enough level that only a low intensity surface fire can be supported post-treatment. Aquatera is able to receive mulched materials from treatment and/or could receive trees and have a chipper on their site to mulch (Mel – contractor). Contact: Sarah Kaut [skaut@aquatera.ca](mailto:skaut@aquatera.ca)

### 5.3. Prescribed Fire

A prescribed fire program could be a useful and successful program for the City of Grande Prairie especially when considering management of fine fuels such as grass (01b). It also provides an opportunity to engage with the public, to cross-train responding agencies, and to incorporate traditional and historical practices of land management.

Type	Code	Hectares
Community Fuel Break	FB1	1.56
Community Fuel Break	FB2	0.50
Community Fuel Break	FB3	1.84
Community Fuel Break	FB4	0.37
Fuel Treatment	FT1	7.44
Fuel Treatment	FT2	4.03

Figure 16 Treatment and fuel break details.

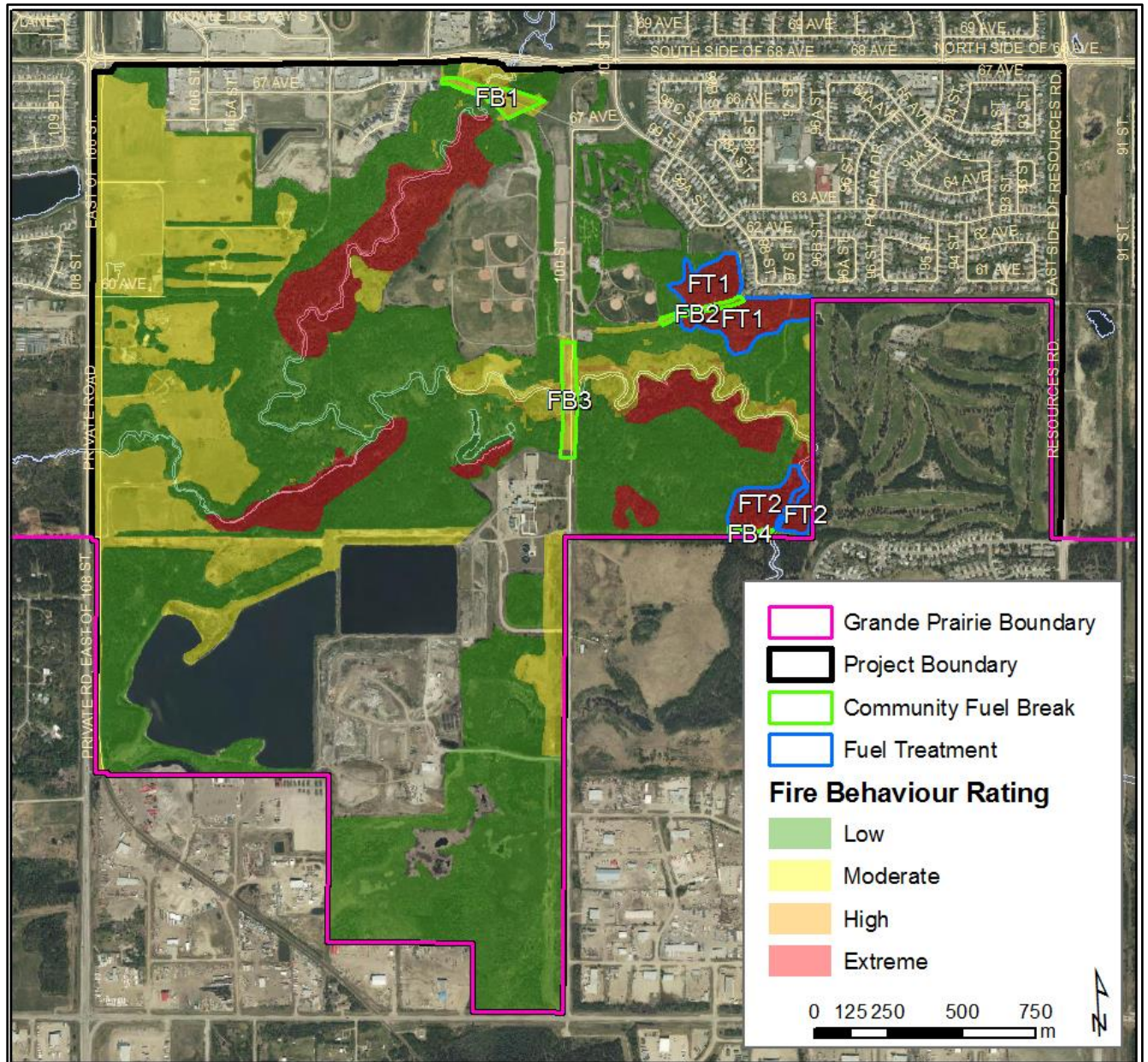


Figure 17 Fuel treatment and fire breaks for the South Bear Creek with fire behaviour rating from low to extreme.





## References

Beverly, J.L., Bothwell, P., Conner, J.C.R., and E.P.K. Herd. 2010. International Journal of Wildland Fire, 19:299-313.

The Canadian Encyclopedia. Last viewed: November 20, 2019.

<https://www.thecanadianencyclopedia.ca/en/article/grande-prairie>

County of Grande Prairie No. 1: Wildfire Mitigation Strategy. 2015.

D. Quintilio and Associates Inc., Macgregor Forestry Ltd., and G. Mandrusiak and Associates Ltd. 2018. Aquatera Wildfire Preparedness Guide for the Grande Prairie Assets.

FireSmart Guidebook for Community Protection: A Guidebook for Wildland/Urban Interface Communities. 2013. Government of Alberta. ISBN No. 978-1-460`-0780-5.

Sandalack and Associates. 2012. Parks and Open Space Master Plan.

## Appendices

### Appendix 1 – Fire Behaviour Information

The following information has been sourced from the FireSmart Guide: Community Protection (2013) manual.

Canadian Forest Fire Danger Rating System (CFFDRS)

Daily Canadian Forest Fire Danger Rating System (CCFDRS FWI)

The daily Fire Weather Index (FWI) can be obtained from ESRD's Wildfire website at <http://www.esrd.alberta.ca/Wildfire/FireWeather>. If this link is not active, complete an internet search for "ESRD fire weather."

Use provincial daily fire danger information to monitor the current situation. The daily fire danger rating is generated from the daily weather data collected from all weather stations in the Forest Protection Area.

Fire Weather Indices (FWI) values over 30 are associated with extreme burning conditions in Alberta. For more information on understanding the fire weather please see:

<https://wildfire.alberta.ca/wildfire-status/fire-weather/understanding-fire-weather.aspx>.

### Fire Weather Indices

Hazard Rating	FFMC Fine Fuel Moisture Code	DMC Duff Moisture Code	DC Drought Code	ISI Initial Spread Index	BUI Build Up Index	FWI Fire Weather Index	HFI Head Fire Intensity
Low	0-76	0-21	0-79	0-1.5	0-24	0-4.5	1-2
Moderate	77-84	22-27	80-189	2-4	25-40	4.5-10.5	3
High	85-88	28-40	190-299	5-8	41-60	10.5-18.5	4
Very High	89-91	41-60	300-424	9-15	61-89	18.5-29.5	5
Extreme	92+	61+	425+	16+	90+	29.5+	6

Fire weather readings in Alberta consist of several variables (precipitation, relative humidity, temperature, and wind direction/speed). Please see the Fire Weather Stations website for more info at:

<https://wildfire.alberta.ca/wildfire-status/fire-weather/fire-weather-stations/default.aspx> and <https://wildfire.alberta.ca/wildfire-status/fire-weather/fire-weather-stations/wildfire-weather-data.aspx>.

For weather report formatting and abbreviations please see:

<https://wildfire.alberta.ca/wildfire-status/fire-weather/fire-weather-stations/weather-report-format.aspx>

## Fire Intensity Class Examples

### Fire Intensity Class Examples



#### **Intensity Class 1** **<10kW/m**

Smouldering ground or creeping surface fire.

These fires have no open flame and produce white smoke. Self-extinguishing unless high drought code and/or build-up index values prevail, in which case extensive mop-up is generally required.



#### **Intensity Class 2** **10-500kW/m**

Low vigour surface fire.

**Rate of Spread: < 1.5m/min.**

These fires produce visible open flame, have little or no spread and have an unorganized flame front. Direct attack by firefighters with hand tools and water is possible. Constructed fireguard should hold.



#### **Intensity Class 3** **500-2,000kW/m**

Moderately vigorous surface fire.

**Rate of Spread: 1.5 - 3.0 m/min.**

This is a vigorous surface fire with an organized front and may display candling. Hand-constructed fireguards are likely to be challenged. Heavy equipment is generally successful in controlling such fires.



#### **Intensity Class 4** **2,000-4,000kW/m**

Highly vigorous surface fire, torching or passive crown fire.

**Rate of Spread: 3.0 - 6.0 m/min.**

This type of fire produces grey to black smoke, has an organized surface flame front and has a moderate to fast rate of spread along the ground. Short aerial bursts and short range spotting will occur with these fires. Control efforts at the fire's head may fail.



#### **Intensity Class 5** **4,000-10,000kW/m**

Extremely vigorous surface fire or active crown fire.

**Rate of Spread: 6.0 - 15.0 m/min.**

This type of fire produces black to copper smoke, has an organized crown fire front, moderate to long-range spotting and independent spot fire growth. Very difficult to control. Suppression action must be restricted to the fire's flanks. Indirect attack with aerial ignition may be effective.



#### **Intensity Class 6** **>10,000kW/m**

Blow-up or large disastrous fire.

**Rate of Spread: > 15.0 m/min.**

Violent fire behaviour, an organized crown fire front and moderate to long-range spotting are characteristic of this fire type. There may be fireballs and whirls. Suppression actions should not be attempted until burning conditions improve.



## Fire Weather Indices Examples

### Fire Weather Indices Examples

Source: Alexander, M.E.; de Groot, W.J. 1988. Fire Behavior in Jack Pine Stands as Related to the Canadian Forest Fire Weather Index (FWI) System. Canadian Forest Service, Northwest Region, Edmonton, Alberta. Poster with text. Reproduced with permission.



Type of fire: Creeping surface fire

**Description of fire behavior:** Fire spread readily across litter and *Cladonia* when pushed by small gusts of wind. Flames exceeded a few centimeters in height only in the occasional small concentrations of woody fuels and in the lowest, lichen-covered dead branches of a few young trees.

Weather Observations	Fuel Moisture Codes
Dry bulb temperature 28.5°C	Fine Fuel Moisture Code 88.7
Relative humidity 48%	Duff Moisture Code 15
10 m open wind 6.3 km/h	Drought Code 143
Days since rain 2	
Fire Behavior Indices	Fire Behavior Characteristics
Initial Spread Index 4.9	Head fire rate of spread 0.6 m/min
Buildup Index 24	Fuel consumption 1.0 kg/m <sup>2</sup>
Fire Weather Index 9.5	Frontal fire intensity 190 kW/m



Type of fire: Low vigor surface fire

**Description of fire behavior:** Spread was slow. Flames were generally less than 0.6 m high, but brief flare-ups occurred in occasional patches of fine dead fuels, low shrubs, and small pines. Some very short-range spotting occurred just ahead of the fire front. Fire frequently ran to the tops of the pines in the abundant tree lichens and bark flakes, but almost never involved other aerial fuels.

Weather Observations	Fuel Moisture Codes
Dry bulb temperature 24.6°C	Fine Fuel Moisture Code 99.0
Relative humidity 45%	Duff Moisture Code 19
10 m open wind 14.8 km/h	Drought Code 151
Days since rain 3	
Fire Behavior Indices	Fire Behavior Characteristics
Initial Spread Index 7.8	Head fire rate of spread 1.0 m/min
Buildup Index 28	Fuel consumption 2.0 kg/m <sup>2</sup>
Fire Weather Index 13.7	Frontal fire intensity 620 kW/m



Type of fire: Low vigor surface fire

**Description of fire behavior:** Fire spread was slow but steady. Flames were generally less than 0.6 m high. A few trees torched, and one spot fire occurred within the unit.

Weather Observations	Fuel Moisture Codes
Dry bulb temperature 27.0°C	Fine Fuel Moisture Code 90.3
Relative humidity 39%	Duff Moisture Code 28
10 m open wind 9.5 km/h	Drought Code 214
Days since rain 6	
Fire Behavior Indices	Fire Behavior Characteristics
Initial Spread Index 8.9	Head fire rate of spread 0.9 m/min
Buildup Index 42	Fuel consumption 2.39 kg/m <sup>2</sup>
Fire Weather Index 15.3	Frontal fire intensity 670 kW/m



Type of fire: Moderately vigorous surface fire

**Description of fire behavior:** Fire spread was steady. Fire frequently burned into the crowns, using tree lichens and bark flakes as ladder fuels. Occasionally, enough heat was generated to torch out the green foliage. Short-range spotting occurred around hot spots.

Weather Observations	Fuel Moisture Codes
Dry bulb temperature 29.0°C	Fine Fuel Moisture Code 80.8
Relative humidity 40%	Duff Moisture Code 31
10 m open wind 8.5 km/h	Drought Code 222
Days since rain 7	
Fire Behavior Indices	Fire Behavior Characteristics
Initial Spread Index 7.2	Head fire rate of spread 2.0 m/min
Buildup Index 46	Fuel consumption 1.54 kg/m <sup>2</sup>
Fire Weather Index 18.9	Frontal fire intensity 950 kW/m



## Fire Weather Indices Examples



**Type of fire:** Moderately vigorous surface fire

**Description of fire behavior:** Spread was moderately fast where exposure to wind was greatest. Limited crowning occurred in one quarter of the unit, but elsewhere steady surface fire prevailed. Numerous small spot fires developed just outside the downwind side of the unit, and there was one long-range spot fire 140 m away.

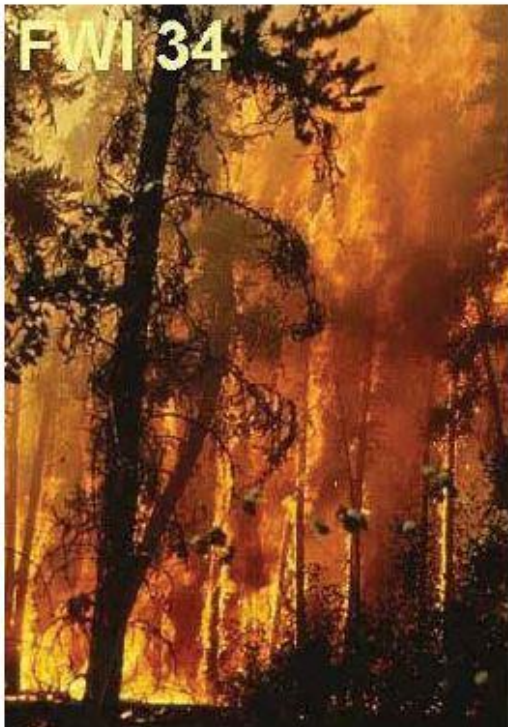
Weather Observations		Fuel Moisture Codes	
Dry bulb temperature	23.0°C	Fine Fuel Moisture Code	90.9
Relative humidity	46%	Duff Moisture Code	43
10 m open wind	8.5 km/h	Drought Code	246
Days since rain	10		
Fire Behavior Indices		Fire Behavior Characteristics	
Initial Spread Index	7.5	Head fire rate of spread	2.0 m/min
Buildup Index	60	Fuel consumption	2.02 kg/m <sup>2</sup>
Fire Weather Index	19.9	Frontal fire intensity	1230 kW/m



**Type of fire:** Very intense surface fire

**Description of fire behavior:** Greater fire intensity was apparent from taller flames and faster spread immediately upon ignition. Torching of crowns was common. Every case of torching resulted in abundant spot fires, which considerably increased the spread rate over that attained through continuous spread in surface fuel.

Weather Observations		Fuel Moisture Codes	
Dry bulb temperature	31.0°C	Fine Fuel Moisture Code	93.6
Relative humidity	28%	Duff Moisture Code	36
10 m open wind	8.5 km/h	Drought Code	231
Days since rain	9		
Fire Behavior Indices		Fire Behavior Characteristics	
Initial Spread Index	10.9	Head fire rate of spread	3.4 m/min
Buildup Index	52	Fuel consumption	1.65 kg/m <sup>2</sup>
Fire Weather Index	24.1	Frontal fire intensity	1900 kW/m



**Type of fire:** Developing active crown fire

**Description of fire behavior:** A crown fire developed almost immediately. Flames were about 30 m high, 10 m higher than the trees. Spotting and high fire intensity resulted in a small, quickly controlled escape.

Weather Observations		Fuel Moisture Codes	
Dry bulb temperature	30.5°C	Fine Fuel Moisture Code	93.7
Relative humidity	33%	Duff Moisture Code	41
10 m open wind	16.9 km/h	Drought Code	239
Days since rain	9		
Fire Behavior Indices		Fire Behavior Characteristics	
Initial Spread Index	16.9	Head fire rate of spread	6.1 m/min
Buildup Index	57	Fuel consumption	3.92 kg/m <sup>2</sup>
Fire Weather Index	34.0	Frontal fire intensity	7460 kW/m



## Fire Behaviour Associated with Forest Fuel Types and Fuel Type Description

### Examples of FBP System Fuel Types – Standard Photographs and Descriptions

The Canadian Forest Fire Behaviour Prediction (FBP) System models the rate of spread, fuel consumption, fire intensity, and fire growth for 16 national benchmark fuel types. Detailed descriptions of the FBP System fuel types can be found in Forestry Canada Information Report ST-X-3. Development and Structure of the Canadian Forest Fire Behaviour Prediction System, Forestry Canada Fire Danger Group 1992.

### About the photos

The pole-mounted logo of the Canadian Forest Fire Danger Rating System (CFFDRS) found in most of the photos was used for scale. The sign is 30cmx30cm and the alternate markings on the pole are 30cm in length. The quadrant used in the Open Fuel Type Group close-up photos are 1 m x 1 m with alternate markings 30 cm in length. Photos were supplied by B.J. Stocks, B.D. Lawson, C.E. Van Wagner, K.G. Hirsch, and W.J. De Groot.

## FBP System Fuel Typical Fuel Complex

### FBP System Fuel Typical Fuel Complex

#### Coniferous

C-1	Spruce Lichen Woodland
C-2	Boreal Spruce
C-3	Mature Jack or Lodgepole Pine
C-4	Immature Jack or Lodgepole Pine
C-5	Red and White Pine
C-6	Conifer Plantation
C-7	Ponderosa Pine - Douglas Fir

#### Deciduous

D-1	Leafless Aspen
-----	----------------

#### Mixedwood

M-1	Boreal Mixedwood - Leafless
M-2	Boreal Mixedwood - Green
M-3	Dead Balsam Fir Mixedwood - Leafless
M-4	Dead Balsam Fir Mixedwood - Green

#### Slash

S-1	Jack or Lodgepole Pine Slash
S-2	White Spruce/Balsam Fir Slash
S-3	Coastal Cedar/Hemlock/Douglas Fir Slash

#### Open

O-1a	Matted Grass
O-1b	Standing Grass

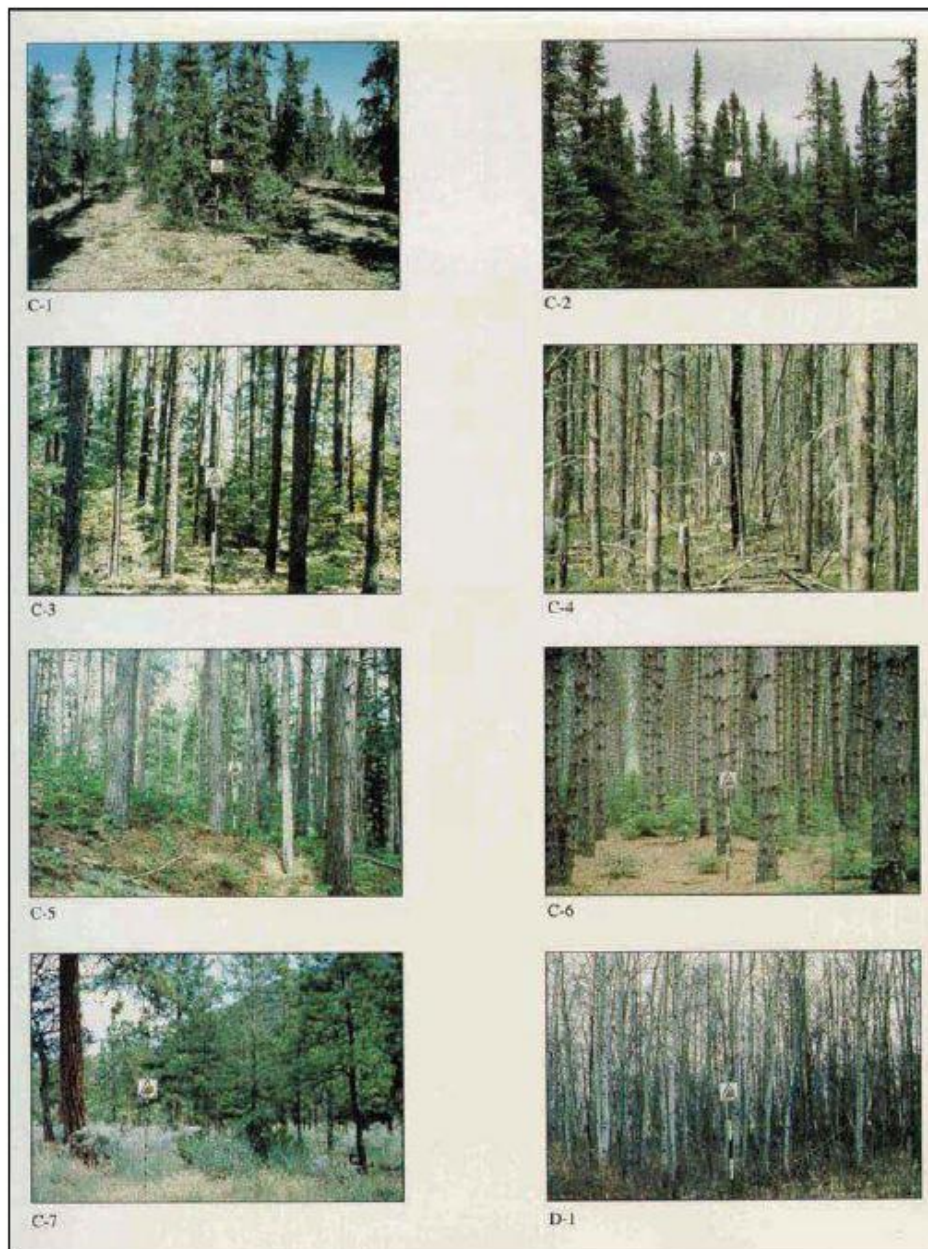
Adapted From: Forestry Canada Fire Danger Group. 1992. Development and structure of the Canadian Forest Fire Behaviour Prediction System. Forestry Canada, Science and Sustainable Development Directorate, Ottawa, ON. Information Report ST-X-3.



## Standard Photographs of CFFDRS FBP System Fuel Types

### Standard Photographs of CFFDRS FBP System Fuel Types

Source: Forestry Canada Fire Danger Group, 1992. Development and Structure of the Canadian Forest Fire Behavior Prediction System. Science and Sustainable Development Directorate, Forestry Canada, Ottawa, Ontario. Information Report ST-X-3. Reproduced with permission.





## Description of CFFDRS FBP System Fuel Types

### Description of CFFDRS FBP System Fuel Types

Source: Forestry Canada Fire Danger Group. 1992. Development and Structure of the Canadian Forest Fire Behavior Prediction System. Science and Sustainable Development Directorate, Forestry Canada, Ottawa, Ontario. Information Report ST-X-3. Reproduced with permission.

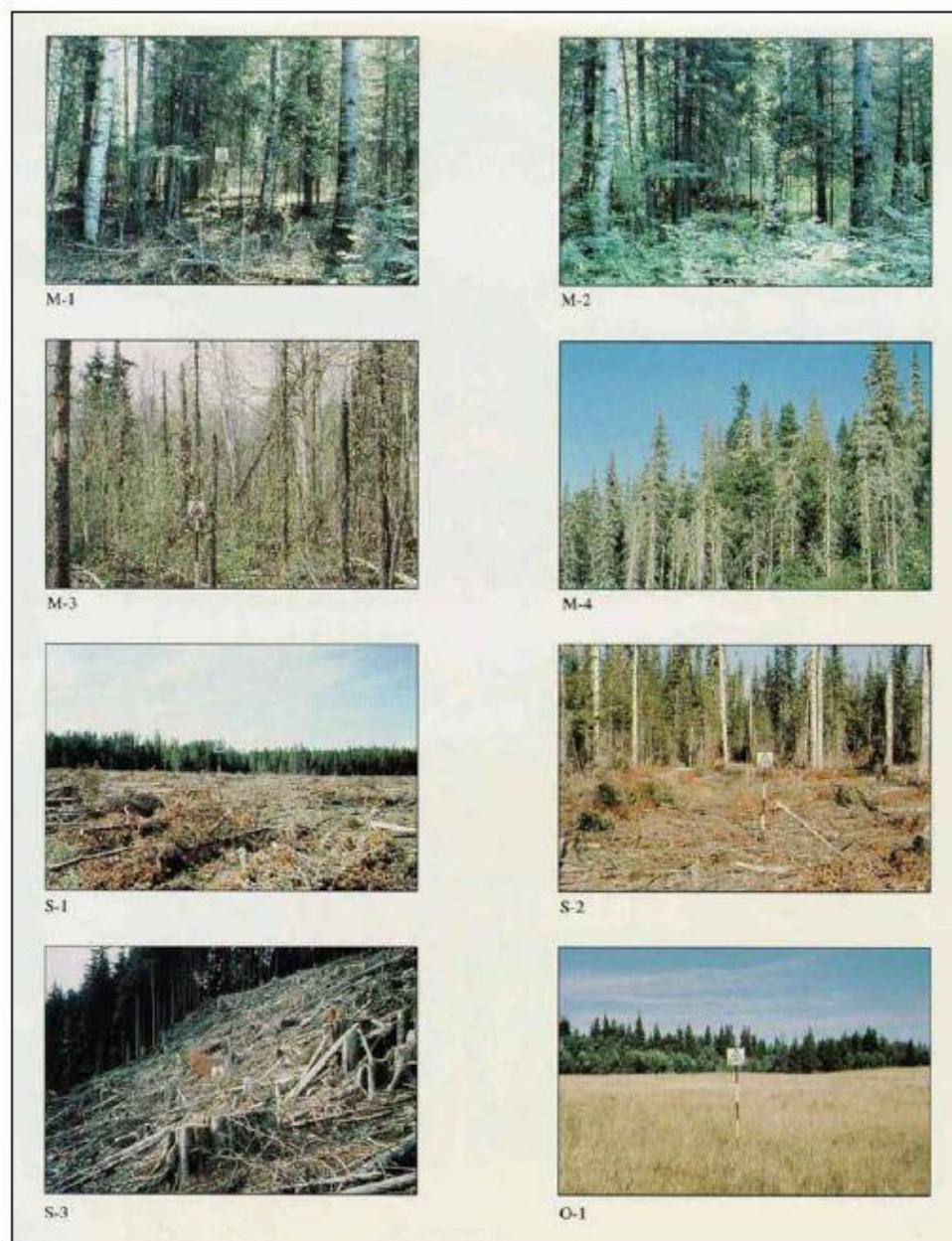
Summary of Canadian Forest Fire Behavior Prediction (FBP) System fuel type characteristics.

Forest floor and organic layer	Surface and ladder fuels	Stand structure and composition
<b>Fuel Type C-1 (Spruce-Lichen Woodland)</b> Continuous reindeer lichen; organic layer absent or shallow; uncompacted.	Very sparse herb/shrub cover and down woody fuels; tree crowns extend to ground.	Open black spruce with dense clumps; assoc. sp. jack pine, white birch; well-drained upland sites.
<b>Fuel Type C-2 (Boreal Spruce)</b> Continuous feather moss and/or <i>Cladonia</i> ; deep, compacted organic layer.	Continuous shrub (e.g., Labrador tea); low to moderate down woody fuels; tree crowns extend nearly to ground; arboreal lichens, flaky bark.	Moderately well-stocked black spruce stands on both upland and lowland sites; <i>Sparganium</i> bogs excluded.
<b>Fuel Type C-3 (Mature Jack or Lodgepole Pine)</b> Continuous feather moss; moderately deep, compacted organic layer.	Sparse conifer understory may be present; sparse down woody fuels; tree crowns separated from ground.	Fully stocked jack or lodgepole pine stands; mature.
<b>Fuel Type C-4 (Immature Jack or Lodgepole Pine)</b> Continuous needle litter; moderately compacted organic layer.	Moderate shrub/herb cover; continuous vertical crown fuel continuity; heavy standing dead and down, dead woody fuel.	Dense jack or lodgepole pine stands; immature.
<b>Fuel Type C-5 (Red and White Pine)</b> Continuous needle litter; moderately shallow organic layer.	Moderate herb and shrub (e.g., hazel); moderate dense understory (e.g., red maple, balsam fir); tree crowns separated from ground.	Moderately well-stocked red and white pine stands; mature; assoc. sp. white spruce, white birch, and aspen.
<b>Fuel Type C-6 (Conifer Plantation)</b> Continuous needle litter; moderately shallow organic layer.	Absent herb/shrub cover; absent understory; tree crowns separated from ground.	Fully stocked conifer plantations; complete crown closure regardless of mean stand height; mean stand crown base height controls ROS and crowning.
<b>Fuel Type C-7 (Ponderosa Pine-Douglas fir)</b> Continuous needle litter; absent to shallow organic layer.	Discontinuous grasses, herbs, except in conifer thickets, where absent; light woody fuels; tree crowns separated from ground except in thickets.	Open ponderosa pine and Douglas fir stands; mature uneven-aged; assoc. sp. western larch, lodgepole pine; understory conifer thickets.
<b>Fuel Type D-1 (Leafless Aspen)</b> Continuous leaf litter; shallow, uncompacted organic layer.	Moderate medium to tall shrubs and herb layers; absent conifer understory; sparse, dead, down woody fuels.	Moderately well-stocked trembling aspen stands; semi-mature; leafless (i.e., spring, fall or diseased).

## Standard Photographs of CFFDRS FBP System Fuel Types

### Standard photographs of CFFDRS FBP System Fuel Types

Source: Forestry Canada Fire Danger Group. 1992. Development and Structure of the Canadian Forest Fire Behavior Prediction System. Science and Sustainable Development Directorate, Forestry Canada, Ottawa, Ontario. Information Report ST-X-3. Reproduced with permission.



## Description of CFFDRS FBP System Fuel Types

### Description of CFFDRS FBP System Fuel Types

Source: Forestry Canada Fire Danger Group. 1992. Development and Structure of the Canadian Forest Fire Behavior Prediction System. Science and Sustainable Development Directorate, Forestry Canada, Ottawa, Ontario. Information Report ST-X-3. Reproduced with permission.

Summary of Canadian Forest Fire Behavior Prediction (FBP) System fuel type characteristics		
Forest floor and organic layer	Surface and ladder fuels	Stand structure and composition
<b>Fuel Types M-1 and M-2 (Boreal Mixedwood)</b>		
Continuous leaf litter in deciduous portions of stands; discontinuous feather moss and needle litter in conifer portions of stands; organic layers shallow, uncompacted to moderately compacted.	Moderate shrub and continuous herb layers; low to moderate dead, down woody fuels; conifer crowns extend nearly to ground; scattered to moderate conifer understory.	Moderately well stocked mixed stand of boreal conifers (e.g., black/white spruce, balsam/subalpine fir) and deciduous species (e.g., trembling aspen, white birch). Fuel types are differentiated by season and percent conifer/deciduous sp. composition.
<b>Fuel Types M-3 and M-4 (Dead Balsam Fir Mixedwood)</b>		
Continuous leaf litter in deciduous portions of stands; discontinuous feather moss and needle litter and hardwood leaves in mixed portions of stands; organic layers moderately compacted, 8-10 cm.	Dense continuous herbaceous cover after green up; down woody fuels low initially, but becoming heavy several years after balsam mortality; ladder fuels dominated by dead balsam understory.	Moderately well stocked mixed stand of spruce, pine and birch with dead balsam fir, often as an understory. Fuel types differentiated by season and age since balsam mortality.
<b>Fuel Type S-1 (Jack or Lodgepole Pine Slash)</b>		
Continuous feather moss and needle litter; moderately deep, compacted organic layer.	Continuous slash, moderate loading and depth; high foliage retention; absent to sparse shrub and herb cover.	Slash from clearcut logging; mature jack or lodgepole pine stands.
<b>Fuel Type S-2 (White Spruce-Balsam Slash)</b>		
Continuous feather moss and needle litter; moderately deep, compacted organic layer.	Continuous to discontinuous slash (due to skidder trails); moderate foliage retention; moderate loading and depth; moderate shrub and herb cover.	Slash from clearcut logging; mature or overmature white spruce, subalpine fir or balsam fir stands.
<b>Fuel Type S-3 (Coastal Cedar-Hemlock-Douglas-fir Slash)</b>		
Continuous feather moss or compacted old needle litter below fresh needle litter from slash; moderately deep to deep, compacted organic layer.	Continuous slash, high foliage retention (cedar); moderate for other species; heavy loading, deep slash; sparse to moderate shrub and herb cover.	Slash from clearcut logging; mature to overmature cedar, hemlock, or Douglas-fir stands.
<b>Fuel Type 0-1 (Grass) Subtypes: O-1a – matted grass, O-1b – standing grass</b>		
Continuous dead grass litter; organic layer absent to shallow and moderately compacted.	Continuous standing grass (current year crop). Standard loading is 0.3 kg/m <sup>2</sup> , but other loading can be accommodated; percent cured or dead must be estimated. Sparse or scattered shrubs and down woody fuel. Subtypes for both early spring matted grass (O-1a) and late summer standing cured grass (O-1b) are included.	Scattered trees, if present, do not appreciably affect fire behavior.



## Wildfire Behaviour in FBP System Fuel Types Under High Wildfire Danger Level

### Wildfire Behaviour in FBP System Fuel Types Under High Wildfire Danger Level

FBP FUEL TYPE		EXPECTED WILDFIRE BEHAVIOUR UNDER HIGH WILDFIRE DANGER LEVEL
C-1	Spruce-Lichen Woodland	Surface, Torching and Crowning
C-2	Boreal Spruce	Almost Always a Crown Fire
C-3	Mature Jack or Lodgepole Pine	Surface and Crown Fire
C-4	Immature Jack or Lodgepole Pine	Almost Always a Crown Fire
C-6	Conifer Plantation	Surface, Torching and Crowning
D-1	Leafless Deciduous	Always a Surface Fire
M-1	Boreal Mixedwood – Leafless	Surface, Torching and Crowning
M-2	Boreal Mixedwood – Green	Surface, Torching and Crowning
S-1	Jack or Lodgepole Pine Slash	Intense Surface Fire
S-2	White Spruce - Balsam Fir Slash	Intense Surface Fire
O-1a	Matted Grass	Intense Surface Fire
O-1b	Standing Grass	Rapid Spreading Intense Surface Fire

## Appendix 2 – FireSmart Zones

The following information has been sourced from the FireSmart Guide: Community Protection (2013) manual.

### Wildland/Urban Interface Zone

The Wildland/Urban Interface Zone is described as the area where various structures and other human developments meet or are intermingled with undeveloped wildland or vegetative fuel types. In the case of an incorporated community as defined by the *Municipal Government Act* (city, town, village, summer village and specialized municipalities), the planning area aligns with the municipalities' geo-administrative boundary. In the case of an unincorporated community (hamlet, locality and rural residential subdivision), provincial cadastral data can be used to assist with determining the planning boundary by using the block and lot development data.

### FireSmart Community Zone

The FireSmart Community Zone encompasses the lands outside cities, towns, villages, summer villages, hamlets, rural county subdivision boundaries and recreational resorts or private lands within or directly adjacent to the Forest Protection Area (FPA). It extends out from the Wildland/Urban Interface Zone. Generally, the FireSmart Community Zone is a 10 kilometre buffer around the community's development centre, but can be amended to capture significant geographic land features that support wildfire protection objectives.

In areas where the wildfire threat potential extends beyond the Wildland/Urban Interface, it is critical that the FireSmart Community Zone boundary be identified because there are government policies, directives and standard operating procedures attached to this FireSmart Community Zone.

For more information, refer to the following directives:

- ▶ FireSmart Consultative Notation (CNT's) Directive
- ▶ Debris Management on Agricultural Dispositions
- ▶ Debris Management Standards for Timber Harvest Operations

### Landscape Zone

This zone extends beyond the FireSmart Community Zone and overlaps multiple jurisdictions at a broad landscape level. This zone focuses on mitigating the likelihood of large, uncontrollable wildfires. Landscape management objectives are integrated and designed to reduce the negative ecological, economic and social impacts of wildfire while maximizing the positive attributes of wildfire.

## Appendix 3 – Fire Resistant Plants

The following information has been sourced from the FireSmart Guide: Community Protection (2013) manual.

### Groundcovers and Herbaceous Perennial Plants

Common Name	Genus and Species	Comments
Bergenia	<i>Bergenia</i> spp.	Very hardy
Blanket Flower	<i>Gaillardia</i> spp.	Very hardy
Bluegrass, Kentucky	<i>Poa pratensis</i>	Very hardy
Buffalograss	<i>Buchloe dactyloides</i>	Very hardy
Candytuft, Evergreen	<i>Iberis sempervirens</i>	Very hardy
Carpet Bugle	<i>Ajuga reptans</i>	Very hardy
Cinquefoil, Spring	<i>Potentilla tabernaemontani</i>	Very hardy
Columbine	<i>Aquilegia</i> spp.	Very hardy
Coral Bells	<i>Heuchera sanguinea</i>	Very hardy
Coreopsis	<i>Coreopsis</i> spp.	Hardy
Cotoneaster	<i>Cotoneaster</i> spp.	Hardy
Cotoneaster, Rock	<i>Cotoneaster horizontalis</i>	Marginally hardy
Cotoneaster, Bearberry	<i>Cotoneaster dammerii</i>	Hardy
Daisy, Shasta	<i>Leucanthemum x superbum</i>	Hardy
Daylily	<i>Hemerocallis</i> spp.	Very hardy
Dusty Miller	<i>Artemisa stelleriana</i>	Very hardy
Fescue	<i>Festuca</i> spp.	Very hardy
Fescue, Blue	<i>Festuca cinerea</i>	Very hardy
Fescue, Tall	<i>Festuca arundinacea</i>	Very hardy
Fescue, Creeping Red	<i>Festuca rubra</i>	Very hardy
Flax	<i>Linum</i> spp.	Very hardy
Fleabane	<i>Erigeron</i> spp.	Very hardy
Geranium, Hardy	<i>Geranium cinereum</i>	Very hardy
Geranium, Bloodred	<i>Geranium sanguineum</i>	Very hardy
Geranium	<i>Geranium</i> spp.	Hardy
Ginger, Wild	<i>Asarum caudatum</i>	Very hardy
Hen and Chicks	<i>Sempervivum tectorum</i>	Very hardy
Iris	<i>Iris</i> spp.	Hardy
Kinnickinnick	<i>Arctostaphylos uva-ursi</i>	Very hardy
Lambs Ear	<i>Stachys byzantina</i>	Very hardy
Lupine	<i>Lupinus</i> spp.	Hardy
Mahonia, Creeping	<i>Mahonia repens</i>	Hardy
Mock Strawberry	<i>Duchesnea indica</i>	Very hardy
Myrtle, Dwarf Periwinkle	<i>Vinca minor</i>	Very hardy
Penstemon, Rocky Mountain	<i>Penstemon strictus</i>	Very hardy
Pinks	<i>Dianthus plumarius</i>	Very hardy
Poppy	<i>Papaver</i> spp.	Very hardy
Potentilla	<i>Potentilla</i> spp.	Hardy
Primrose, Mexican Evening	<i>Oenothera berlandieri</i>	Hardy
Primrose	<i>Oenothera</i> spp.	Hardy
Pussytoes	<i>Antennaria</i> spp.	Very hardy
Ryegrass	<i>Lolium</i> spp.	Very hardy
Sage	<i>Salvia</i> spp.	Very hardy to hardy
Sedum, Goldmoss	<i>Sedum acre</i>	Very hardy
Snow-in-Summer	<i>Cerastium tomentosum</i>	Very hardy
Stonecrop	<i>Sedum spathulifolium</i>	Hardy
Stonecrop, Green	<i>Sedum album</i>	Very hardy
Strawberry, Wild	<i>Fragaria chiloensis</i>	Very hardy
Thrift, Common	<i>America maritima</i>	Very hardy
Thyme, Wooly	<i>Thymus pseudolanuginosus</i>	Very hardy



Thyme, Creeping	<i>Thymus praecox articus</i>	Very hardy
Valerian, Red	<i>Centranthus ruber</i>	Hardy
Violet, Canadian	<i>Viola canadensis</i>	Hardy
Virginia Creeper	<i>Parthenocissus quinquefolia</i>	Very hardy
Wheatgrass, Western	<i>Pascopyrum smithii</i>	Very hardy
Wheatgrass, Crested (low-growing)	<i>Agropyron cristatum</i>	Very hardy
Winterfat	<i>Eurotia</i> spp.	Very hardy
Yarrow	<i>Achillea</i> spp.	Very hardy
Yarrow, White	<i>Achillea millefolium</i>	Very hardy
Yarrow, Fernleaf	<i>Achillea filipendulina</i>	Very hardy
Yarrow, Wooly	<i>Achillea tomentosa</i>	Very hardy
Yucca	<i>Yucca filamentosa</i>	Hardy

## Trees

Common Name	Genus and Species	Comments
Alder, White	<i>Alnus rhombifolia</i>	Hardy
Ash	<i>Fraxinus</i> spp.	Hardy
Ash, Green	<i>Fraxinus pennsylvanica</i>	Hardy
Aspen	<i>Populus tremuloides</i>	Hardy
Birch	<i>Betula</i> spp.	Hardy
Cottonwood	<i>Populus</i> spp.	Hardy
Hackberry	<i>Celtis occidentalis</i>	Hardy
Rose family	<i>Rosa</i> spp.	Hardy
Maple	<i>Acer</i> spp.	Hardy
Maple, Big-toothed	<i>Acer grandidentatum</i>	Hardy
Maple, Box Elder	<i>Acer negundo</i>	Hardy
Maple, Rocky Mountain	<i>Acer glabrum</i>	Hardy
Olive, Russian	<i>Eleagnus angustifolia</i>	Hardy
Poplar	<i>Populus</i> spp.	Hardy
Narrowleaf Cottonwood	<i>Populus angustifolia</i>	Hardy

## Shrubs

Common Name	Genus and Species	Comments
Blueberry	<i>Vaccinium</i> spp.	Hardy
Buckthorn	<i>Rhamnus</i> spp.	Hardy
Buffaloberry	<i>Shepherdia</i> spp.	Hardy
Buffaloberry, Russett	<i>Shepherdia canadensis</i>	Hardy
Buffaloberry, Silver	<i>Shepherdia argentea</i>	Hardy
Cherry	<i>Prunus</i> spp.	Hardy
Cherry, Sand	<i>Prunus besseyi</i>	Hardy
Cherry, Nanking	<i>Prunus tomentosa</i>	Hardy
Chokecherry	<i>Prunus virginiana</i>	Hardy
Cinquefoil, Shrubby	<i>Potentilla fruticosa</i>	Hardy
Deerbrush (Buckbrush)	<i>Ceanothus</i> spp.	Hardy
Dogwood, Red-osier	<i>Cornus sericea</i> ( <i>C. stolonifera</i> )	Hardy
Gooseberries and Currants	<i>Ribes</i> spp.	Hardy
Honeysuckle	<i>Lonicera</i> spp.	Hardy
Lilac, Common	<i>Syringa vulgaris</i>	Hardy
Mockorange	<i>Philadelphus</i> spp.	Hardy
Plum, Native	<i>Prunus americana</i>	Hardy
Raspberry	<i>Rubus</i> spp.	Hardy
Roses	<i>Rosa</i> spp.	Hardy
Saltbush	<i>Atriplex</i> spp.	Hardy
Sumac, Skunkbush	<i>Rhus trilobata</i>	Hardy

## Appendix 4 – First Nation, Indigenous Communities, and Metis Nations in Alberta

First Nations Administrative and Political Organizations	Address	Phone	Fax
Aboriginal Financial Officers Association of Alberta Email: robert.andrew@afsoab.com Website: www.afsoab.com	PO Box 1010 SKOKA AB T0J 3W0	403-734-5446	403-398-0021
Assembly of First Nations Alberta Region Email: gphelan@afn.ca Website: www.afn.ca/index.php/en/about-afn/afn-executive-committee	200, 17628 103 Avenue EDMONTON AB T5S 1J9	587-337-0054	780-483-1404
Atihabasca Tribal Council Email: atn@atn.org Website: www.atn.org	8206 McCormick Drive FORT McMURRAY AB T9H 1C7	780-791-6538	780-791-0946
Confederacy of Treaty Six First Nations Website: www.treaty6.org	204, 15310 176 Street EDMONTON AB T5S 1J3	780-944-0334	780-944-0346
First Nations (Alberta) Technical Services Advisory Group Email: bmcandina@tsag.net Website: www.tsag.net	18232 102 Avenue, Santa Fe Plaza EDMONTON AB T5S 1S7	780-483-8601	780-483-8622
Kee Tsu Koo Now Tribal Council Website: www.ktsn.com	PO Box 120 HIGH LEVEL AB T0G 0C0	780-767-2285	780-767-3447
Lesser Slave Lake Indian Regional Council Website: www.lslrc.com	PO Box 269 SLAVE LAKE AB T0G 2A0	780-849-4943	780-849-4935
North Peace Tribal Council Email: admin@nptc.ca Website: www.nptc.ca	PO Box 1140 HIGH PRAIRIE AB T0G 1E0	780-523-4401	1-800-252-7883
North Peace Tribal Council Email: admin@nptc.ca Website: www.nptc.ca	PO Box 1889 HIGH LEVEL AB T0H 1D0	780-526-3446	780-526-4075
Treaty 7 Management Corporation Email: contactus@treaty7.org Website: www.treaty7.org	Sub office: 106, 17707 105 Avenue EDMONTON AB T5S 1V4	780-455-0204	780-451-6116
Treaty 8 First Nations of Alberta Email: info@treaty8.ca Website: www.treaty8.ca	400, 9911 Chila Boulevard TSUJ TINA AB T2W 6H6	403-281-9779	403-281-9783
Tribal Ours Ventures Inc. Email: info@tribalours.com Website: www.tribalours.com	Sub office: 101, 12111 40 Street SE CALGARY AB T2Z 4E6	403-539-0250	403-539-0363
Western Cree Tribal Council Email: executive.assistant@westerncree.ca Website: www.westerncree.ca	18178 102 Avenue, Santa Fe Plaza EDMONTON AB T5S 1S7	780-444-9366	780-444-1465
Yellowhead Tribal Council Email: admin@ytcadmn.ca	4907 47 Street ST. THOMAS AB T0A 2A0	780-645-4215	780-645-5850
	Sub office: 200, 17628 103 Avenue EDMONTON AB T5S 1J9	780-481-3363	780-483-1404
	PO Box 2129 VALLEYVIEW AB T0H 3N0	780-524-5578	780-524-2898
	Sub office: 104, 9803 87 Avenue GRANDE PRAIRIE AB T8V 7K2	780-522-3009	780-522-3339
	PO Box 150 ENOCY AB T7X 3Y3	780-470-3454	780-470-3541

### First Nations in Alberta



**In Alberta there are:**

- 45 First Nations in three treaty areas
- 140 reserves
- Approximately 812,771 hectares of reserve land

The most commonly spoken First Nations languages are:  
Blackfoot; Cree; Chipewyan; Dene; Sarcee; and Stoney (Nakoda Sioux)

**Treaty 6**  
Signed at Carlton and Fort Pitt in 1876  
Covers central Alberta and Saskatchewan  
16 Alberta First Nations

**Treaty 7**  
Signed at the Blackfoot Crossing of Bow River and Fort Macleod in 1877  
Covers southern Alberta  
5 Alberta First Nations

**Treaty 8**  
Signed at Lesser Slave Lake in 1899  
Covers portions of northern Alberta, British Columbia, Saskatchewan and part of Northwest Territories  
24 Alberta First Nations

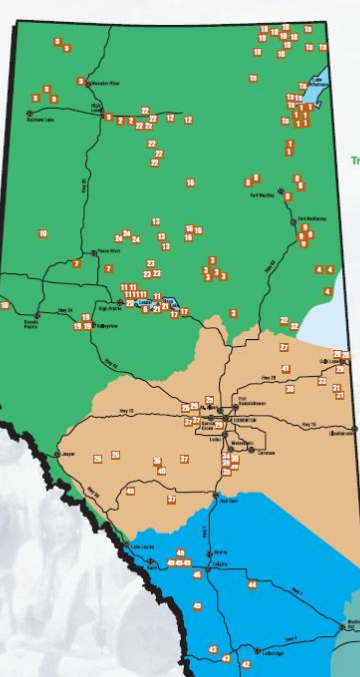
For information regarding reproduction rights, please contact Public Works and Government Services Canada at: 613-996-6886 or at: droitdauteur.copyright@tpsgc-pwgsc.gc.ca

Aboriginal Affairs and Northern Development Canada  
Alberta Region Office  
630 Canada Place  
9100 Jasper Avenue  
EDMONTON AB T5J 4G2  
Phone (780) 495-2773  
Fax (780) 495-6088

www.sfn.ca  
1-866-967-8668  
TTY only 1-866-967-8668  
CIS 6289-010-EEA1  
Catalogue No. 95-102/146-PDF  
ISBN 95-102/146-PDF

© Her Majesty the Queen in Right of Canada, represented by the Minister of Aboriginal Affairs and Northern Development, 2014  
This publication is also available in French under the title: Premières nations de l'Alberta

First Nations	Address	Phone	Fax	Website
<b>Treaty 8</b>				
1 Athabasca Chipewyan First Nation	PO Box 366, FORT CHIPEWYAN AB T0P 1B0	780-697-3730	780-697-3500	www.sfn.ca
2 Beaver First Nation	PO Box 270, HIGH LEVEL AB T0H 1D0	780-927-3544	780-927-4064	
3 Bigstone Cree Nation	PO Box 960, WABASCA AB T0G 2K0 1-800-268-6783	780-891-2836	780-891-2942	www.bigstone.ca
4 Chipewyan Prairie First Nation	CG, CHARD AB T0P 1G0	780-559-2259	780-559-2213	www.sfn.org
5 Dene First Nation	PO Box 125, CHATILLU AB T0H 0S0	780-321-3775	780-321-3886	www.dene.ca
6 Driftpile First Nation	PO Box 30, DRIFTPILE AB T0H 0V0	780-255-3868	780-255-3650	www.driftpilecreeation.com
7 Duncan's First Nation	PO Box 148, BROWNWALL AB T0H 0L0	780-597-3777	780-597-3920	www.duncansfn.ca
8 Fort McKay First Nation	PO Box 3365, FORT McMURRAY AB T9H 3G4	780-828-4220	780-828-4680	www.fortmckay.com
9 Fort McMurray First Nation	PO Box 6136, FORT McMURRAY AB T9H 4W1	780-534-2293	780-534-2457	www.sfn.org
10 Stone Lake First Nation	PO Box 303, HYTHE AB T0H 2C3	780-356-2248	780-356-3626	www.westerncree.ca
11 Kapaewo First Nation	PO Box 10, GROUND AB T0G 1C0	780-751-3800	780-751-3864	www.kapaewo.ca
12 Little Red River Cree Nation	PO Box 30, JOHN D'OR PRAIRIE AB T0H 2X0	780-759-2912	780-759-3780	www.lrrcn.ab.ca
13 Loon River First Nation	PO Box 189, RED SALT CREEK AB T0G 1N0	780-649-2883	780-649-3873	www.loonriver.net
14 Lubicon Lake Band	PO Box 1351, ST SADDOR AB T0H 3B0	780-629-2255	780-629-2873	www.lubiconlakeband.ca
15 Mikisew Cree First Nation	PO Box 91, FORT CHIPEWYAN AB T0P 1B0 1-800-668-1634	780-697-3740	780-697-3826	www.mikisewcree.ca
16 Pease River First Nation	PO Box 128, PEASE RIVER AB T0G 2W0 1-877-434-0404	780-869-2985	780-869-3986	
17 Sawridge Band	PO Box 326, SLAVE LAKE AB T0G 2A0	780-849-4331	780-849-3446	www.sawridgefirstnation.com
18 Smith's Landing First Nation	PO Box 1470, FORT SMITH NT X0S 0P0	867-872-4950	867-872-5154	www.smithslanding.com
19 Sturgeon Lake Cree Nation	PO Box 757, VALLEYVIEW AB T0H 3N0	780-524-3307	780-524-2711	www.sturgeonlake.ca
20 Sucker Creek First Nation	PO Box 65, ENLDA AB T0G 0W0 1-800-567-5552	780-523-4426	780-523-3111	www.sfn.biz
21 Swan River First Nation	PO Box 270, KINUSO AB T0G 1K0	780-775-2536	780-775-3796	www.swanriverfirstnation.org
22 Tallcorn First Nation	PO Box 105, FORT VERNON AB T0H 1N0	780-827-3277	780-827-4075	www.tallcornfirstnation.ca
23 Whitefish Lake First Nation (Atikameg)	CG, ATKAMEG AB T0G 0C0	780-767-3914	780-767-3922	
24 Woodland Cree First Nation	CG, CADOTTE LAKE AB T0H 0N0 1-800-465-8029	780-629-3803	780-629-3898	www.woodlandcree.net/wpl
<b>Treaty 6</b>				
25 Alexander First Nation	PO Box 3415, MORINVILLE AB T8R 1S3	780-939-5887	780-939-6166	www.alexanderfn.com
26 Alexis Nkottai Sioux Nation	PO Box 2, GLENVIEW AB T0E 0K0	780-967-2225	780-967-5484	www.alexisnkottai.com
27 Beaver Lake Cree Nation	PO Box 960, LAC LA PICHE AB T0A 2C0	780-623-4549	780-623-4523	www.beaverlakecree.com
28 Cold Lake First Nation	PO Box 178, COLD LAKE AB T8M 0T4 1-888-222-7183	780-596-7183	780-596-2577	www.cldfn.com
29 Goodfish Cree Nation	PO Box 29, ENOCY AB T7X 3Y3 1-888-470-4505	780-470-4505	780-470-3922	www.goodfishcree.ca
30 Ermine Lake Cree Nation	PO Box 219, MAXWACAS AB T0C 1N0 1-866-585-3944	780-585-2141	780-585-2520	www.erminecree.ca
31 Frog Lake First Nation	CG, FROG LAKE AB T0A 1M0	780-943-3737	780-943-3966	www.froglake.ca
32 Heart Lake First Nation	PO Box 447, LAC LA PICHE AB T0A 2C0	780-623-2130	780-623-3505	www.hln.ca
33 Kettle Lake Cree Nation	PO Box 229, KULUWIN AB T0A 1C0	780-626-2333	780-626-2355	www.kettlelakecree.com
34 Louis Bull Tribe	PO Box 130, MAXWACAS AB T0C 1N0 1-888-281-7907	780-585-2878	780-585-3799	www.louisbulltribe.ca
35 Montana First Nation	PO Box 70, MAXWACAS AB T0C 1N0	780-585-2144	780-585-3264	www.montanafirstnation.com
36 Ojibwa First Nation	PO Box 1570, ROCKY MOUNTAIN HOUSE AB T4T 1B2	403-989-2943	403-989-3795	www.ojibwa.ca
37 Paul First Nation	PO Box 89, DUFFIELD AB T0E 0N0	780-892-2691	780-892-3402	www.paulfirstnation.com
38 Saddle Lake Cree Nation <sup>1</sup>	PO Box 100, SADDLE LAKE AB T0A 2T0	780-726-2829	780-726-3788	www.saddlelake.ca
39 Samson Cree Nation	PO Box 159, MAXWACAS AB T0C 1N0 1-888-661-2579	780-421-4006	780-585-2700	www.samsoncree.com
40 Sunchild First Nation	PO Box 747, ROCKY MOUNTAIN HOUSE AB T4T 1A5	403-989-2140	403-989-2533	
41 Whitefish Lake First Nation (Goodfish) <sup>1</sup>	PO Box 271, GOODFISH LAKE AB T0A 1B0 1-800-409-3978	780-636-7000	780-636-3534	www.wv1728.ca
<b>Treaty 7</b>				
42 Blood Tribe	PO Box 60, STANDOFF AB T0L 1Y0	403-737-3753	403-737-2336	www.bloodtribe.org
43 Pikani Nation	PO Box 70, BROCKTON AB T0K 0H0	403-965-2940	403-965-2214	www.pikani.com
44 Siksika Nation	PO Box 1105, SKIKKA AB T0J 3W0 1-800-551-5724	403-264-7250	403-734-5262	www.siksikanation.com
45 Stoney Tribe - Bearspaw, Chiniki and Wesley	PO Box 40, MCHILLY AB T0L 1N0	403-881-2770	403-881-2676	www.stoney.com
46 Tsuu Tina Nation	200, 9911 Chila Boulevard, TSUJ TINA AB T2W 6H6	403-281-4455	403-251-6061	www.tsuutina.ca



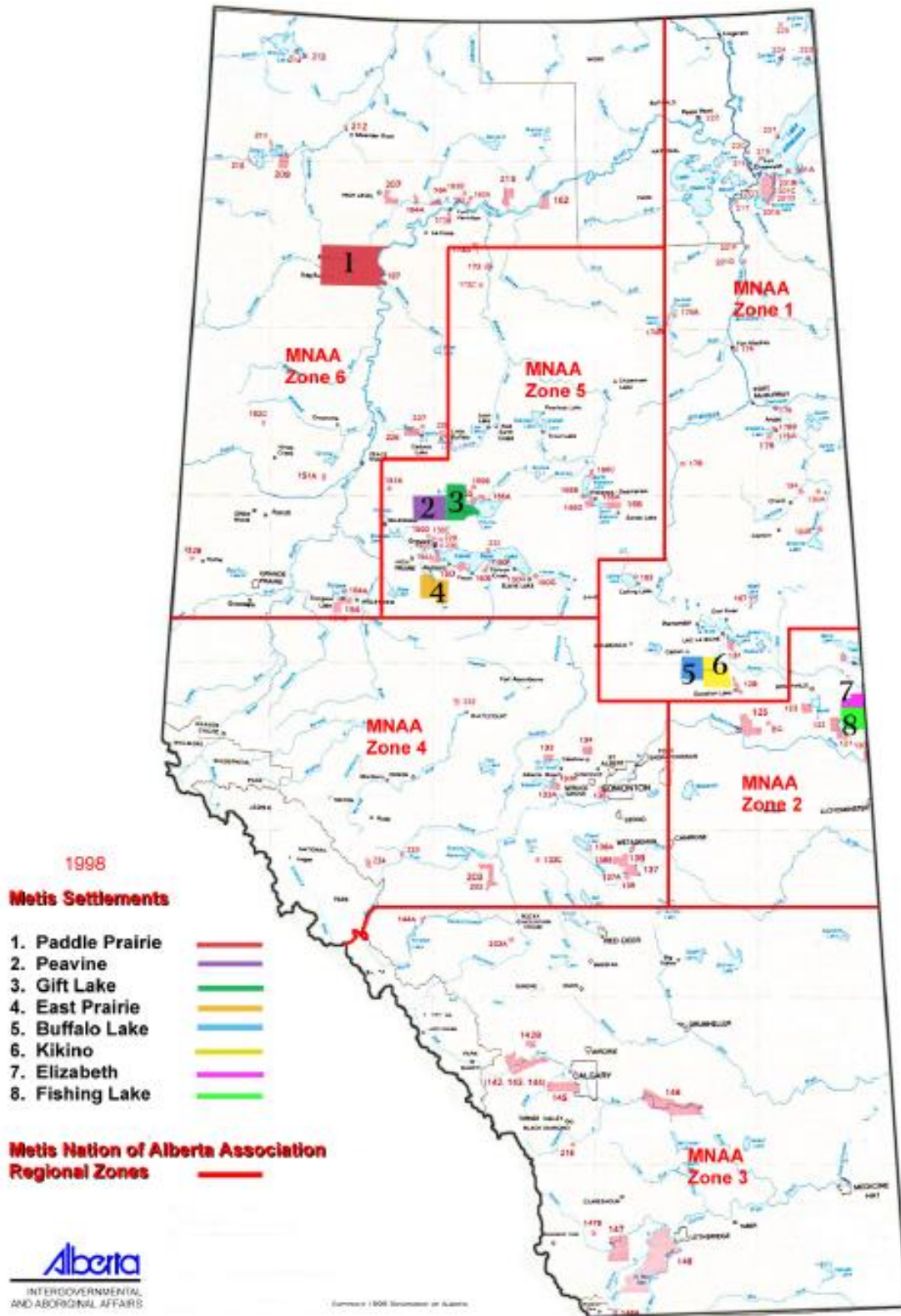
**Treaty 8**

**Treaty 6**

**Treaty 7**

<sup>1</sup> The Saddle Lake Cree Nation and Whitefish Lake (Goodfish) First Nation are administered separately but are considered one band under the Indian Act.







## RESERVE

Alexander	134	E-3
Alexis	133	E-3
Allison Bay	219	A-5
Amber River	211	A-1, A-2
Assiniboine River	150F	D-3
Beaver Lake	131	D-4
Beaver Ranch	163	B-3
Beaver Ranch	163A-B	B-3
Big Horn	144A	F-2
Bistcho Lake	213	A-2
Blood	148	H-4
Blood	148A	H-4
Blue Quills First Nation Reserve	BQ	E-5
Boyer River	164	B-2, B-3
Buck Lake	133C	F-3
Bumby River	207	B-2
Carcajou Settlement	187	B-2
Cardinal River	234	F-2
Charles Lake	225	A-5
Child Lake	164A	B-2
Chipewyan	201	B-5
Chipewyan	201A-E	B-5
Chipewyan	201F-G	B-4
Clear Hills	152C	C-1
Clearwater	175	C-5
Cold Lake	149	E-5
Cold Lake	149A-B	D-5
Coin Lake	223	A-5
Cornwall Lake	224	A-5
Cowper Lake	194A	C-5
Devil's Gate	220	A-5
Dog Head	218	A-4
Driftpile River	150	D-3
Duncan's	151A	C-2
Eden Valley	216	G-3
Elk River	233	F-2
Ermineskin	138	F-4
Fort McKay	174	C-4
Fort Vermilion	173B	B-3
Fort Lake	162	B-3
Freeman	150B	D-2, D-3
Gregoire Lake	176	C-5
Gregoire Lake	176A-B	C-5
Grouard	229	D-3
Grouard	230	D-3
Grouard	231	D-3
Halcyon	150C	D-2, D-3
Hay Lake	209	A-2, B-2
Heart Lake	167	D-4
Horse Lake	152B	D-1
House River Indian Cemetery	178	C-4
Jackfish Point	214	A-2
Jamieson	194	C-5
Jean Baptiste Gumbler	183	D-4
John D'Or Prairie	215	B-3
Kahewin	123	E-5
Louis Bull	138B	F-4
Maknook	120	E-5
Montana	139	F-4
Nasur Lake	174B	B-4
Nasur River	174A	B-4
O'Chiese	203	F-3
O'Chiese Cemetery	203A	F-3
Old Fort	217	B-4
Pakashan	150D	D-2
Peace Point	222	E-5
Peigan	147	H-4
Peigan (timber limit)	147B	H-3
Pigeon Lake	138A	F-3
Pukikowewin	122	E-5
Sand Point	221	A-5
Saddle Lake	125	E-4, E-5
Samson	137	F-4
Samson	137A	F-4
Sarcee	145	G-3
Sawridge	150G-H	D-3
Siksika	146	G-4
Stoney	142, 143, 144	G-3

## RESERVE

Stoney	142B	G-3
Stony Plain	135	E-4
Sturgeon Lake	154	D-2
Sturgeon Lake	154A-B	D-2
Sucker Creek	150A	D-2, D-3
Sunchild Cree	202	F-3
Swan River	150E	D-3
Tallcree	173	B-3
Tallcree	173A	B-3
Uniponhoos	121	E-5
Upper Hay River	212	A-2
Utkoomak Lake	155	D-3
Utkoomak Lake	155A	D-3
Utkoomak Lake	155B	C-3
Wabamun	133A-B	E-3
Wabasca	166	D-4
Wabasca	166A	D-4
Wabasca	166B	C-3, D-3
Wabasca	166C	C-3
Wabasca	166D	D-3
Wadlin Lake	173	B-5
Whitecourt	232	E-3
Whitefish Lake	128	E-4
William McKenzie	151K	C-2
Winefred Lake	194B	D-5
Woodland Cree	226-228	C-2, C-3
Zama Lake	210	A-1, B-1

## FIRST NATION

## RESERVE NUMBER (S)

Alexander	134
Alexis	133, 232-234
Athabasca Chipewyan	201, 201A-G
Beaver	164, 164A
Beaver Lake	131
Bigstone Cree	166, 166A-D, 183
Blood Tribe	148, 148A
Chipewyan Prairie	194, 194A-B
Cold Lake	149, 149A-B
Dene Tha'	207, 209-214
Driftpile River	150
Duncan's	151A, 151K
Enoch	135
Ermineskin	138, 138A*
Fort McKay	174, 174A-b
Fort McMurray	175, 176, 176A-B
Frog Lake	121, 122
Heart Lake	167
Horse Lake	152B-C
Kapawno	229, 230, 231, 150B-D
Kahewin	123
Little Red River	162, 215
Loon River Cree	No Reserve
Louis Bull	138B
Lubicon Lake	No Reserve
Mikisew Cree	217-225
Montana	139
O'Chiese	203, 203A
Paul	133A-C
Peigan	147, 147B
Saddle Lake	125, 128
Samson Cree	137A
Sawridge	150G-H
Siksika	146
Stoney	142, 142B, 143, 144, 144A, 216
Sturgeon Lake	154, 154A-B
Sucker Creek	150A
Sunchild Cree	202
Swan River	150E-F
Tallcree	163, 163A-B, 173, 173A-C
Tsuu T'ina Nation	145
Whitefish Lake	155, 155A-B
Woodland Cree	226-228

\* Held jointly by Four Bands (Ermineskin, Samson, Montana and Louis Bull)



## Example of consultation email

----- Forwarded message -----

From: **James Kostuk** <jkostuk@cityofgp.com>

Date: Fri, Sep 13, 2019 at 9:18 AM

Subject: FireSmart - City of Grande Prairie

To: Shannon.Dunfield@albertahealthservices.ca <Shannon.Dunfield@albertahealthservices.ca>

Cc: shiftingmosaicsconsulting@gmail.com <shiftingmosaicsconsulting@gmail.com>

Dear Shannon Dunfield,

I received your contact information from Arlene Karbashewski with the City of Grande Prairie.

My name is James and I am the Fire Marshal for the City of Grande Prairie. We are initiating a FireSmart project including wildfire mitigation planning and preparedness in the South Bear Creek area of Grande Prairie.

I am writing to you today to extend an invitation to you or a designate from your organization to participate or share knowledge in this process as you feel appropriate. Our project team includes wildland fire specialists and myself as the project manager.

We wanted to reach out to you and to welcome your participation and guidance in this process.

We will be gathering together in person to discuss this project during the week of October 21-24 2019. If you are interested in participating with us, please let me know at your earliest convenience.

I can be reached at [jkostuk@cityofgp.com](mailto:jkostuk@cityofgp.com)

Sincerely,

James

**James Kostuk**

**Fire Marshal**

**Grande Prairie Fire Department**

**780-538-0400**

## Appendix 5 – Threat Assessment Worksheet

WILDLAND URBAN INTERFACE WILDFIRE THREAT ASSESSMENT WORKSHEET						<input type="checkbox"/> Pre-treatment	<input type="checkbox"/> Post-treatment
Plot #:		Community:					
Address:		Geographic Location/Street Name:					
Date:		GPS/UTM:					
Photos: Y N R:		Land Ownership: <input type="checkbox"/> Crown <input type="checkbox"/> Private <input type="checkbox"/> L.R. Other (specify):					
COMPONENT / Subcomponent	LEVELS						
Point	A	B	C	D	E		
1 Duff Depth and Moisture Regime (cm)	1-42 3	2-45 Dry Zonal Wet 5 3 1	5-40 Dry Zonal Wet 10 6 2	10-20 Dry Zonal Wet 12 8 4	>20 Dry Zonal Wet 15 10 5		
2 Surface Fuel Continuity (% cover)	<20 2	20-40 2	41-60 3	61-80 4	>80 5		
3 Vegetation Fuel Characteristics	Moss, herbs, Irrigated crops, Low Flammability Woods 1	Herbs, Deciduous Shrubs 2	Lichen, Conifer Shrubs 3	Pinus, Juniper 4	Sagebrush, Blackberry, Arctostaphylos, Scotch Broom 5		
4 Fine Woody Debris Continuity (<1cm) (% cover)	<1 coverage 1	Scattered, <10 coverage 5	10-25 coverage 7	>25 coverage, <10 cm deep 10	>25 coverage, >10 cm deep 15		
5 Large Woody Debris Continuity (>1cm) (% cover)	<1 coverage 1	Scattered, <10 coverage 2	10-25 coverage 5	>25 coverage, not elevated 7	>25 coverage, partially elevated 10		
6 Live and Dead Coniferous Crown Closure (%)	<20 2	20-40 5	41-60 10	61-80 15	>80 10		
7 Live Deciduous Crown Closure (%)	>80 or <40% coniferous crown closure 0	61-80 2	41-60 3	20-40 4	<20 5		
8 Live and Dead Conifer Crown Base Height (m)	5+ or <20% conifer crown closure 0	3-5 5	2-3 7	1-2 10	<1 15		
9 Live and Dead Suppressed and Overstory Conifers (dominant)	0-500 2	501-1000 5	1001-2000 10	2001-4000 20	>4000 30		
10 Forest Health (% of dominant and co-dominant stress)	Standing Dead and Partly Down <5 or <10 dom/ha 0	Standing Dead and Partly Down 5-25 5	Standing Dead and Partly Down >25-50 10	Standing Dead and Partly Down >50-75 20	Standing Dead and Partly Down >75 30		
11 Continuous Forest/Slash Cover within 10m (%)	0-20 0	21-40 3	41-60 5	61-80 7	>80 10		
Sub Total					/155*		
Weather	A	B	C	D	E		
12 Biogeomorphic Zone	A1, Irrigated 1	CWB, CDE, MH Dry Zonal Wet 5 3 1	ICH, SBS, ESS Dry Zonal Wet 10 7 3	IDE, MS, SBPS, CWI d1 & d2, DMES, SWB - Dry Zonal Wet 15 10 5	PE, BG 15		
13 Historical Wildfire Occurrence (by WWB fire zone)	G5, R1, R2, G6, V5, R9, V9, K5, K6, R8, V7 1	G3, G8, K3, R4, V6, G1, G9, V8 5	G7, C5, G4, C4, V1, C1, N6 8	K1, K5, K3, C2, C1, N5, K6, K4, K7, K2 10	N7, K4, K2, N1 15		
Sub Total					/30		
Topography	A	B	C	D	E		
14 Aspects (>15% slope)	North 0	East 5	<16% slope, all aspects 10	West 12	South 15		
15 Slope (%)	<16 1	16-29 and max slope for North slopes 5	30-44 10	45-54 12	>55 15		
16 Terrain	Flat 1	Holling 3	Sloped terrain, minor low relief draws 5	Consistent slope, deep draws or shallow gullies 7	Consistent slope, deep gullies 10		
17 Landscape/Topographic Limitations to Wildfire Spread	<5 ha isolated forest land 1	North and/or east aspects dominant, wildfire spread restricted from South and/or West 2	Mountainous terrain, uneven topography, regular aspect and slope changes, multiple restrictions to wildfire spread, large water bodies 5	Holling terrain, minor water bodies, minimal aspect and slope changes, minor restrictions to wildfire spread 10	Continuous, consistent topography, No restriction to wildfire spread 15		
Sub Total					/55		
FUEL, WEATHER AND TOPOGRAPHY WILDFIRE BEHAVIOUR THREAT SCORE							
Structural	A	B	C	D	E		
18 Position of Structure/Community on Slope	No Structures Values within 2 km 0	Bottom of slope, valley bottoms 5	Mid slope benchland, elevated valley, <16% slope 10	Mid slope continuous, >15% slope 12	Upper 1/3 of Slope 15		
19 Type of Development	No Structures Values within 2 km 0	Perimeter interface, no inclusions 3	Perimeter interface, with inclusions 5	Intermix > 1 structure/ha 8	Intermix < 1 structure/ha 10		
20 Position of Assessment Area Relative to Values	No Structures Values within 2 km 0	Above >500 200-500 <200 m 1 10 20	Sideline >500 200-500 <200 m 1 12 25	Flat/Bolling >500 200-500 <200 m 1 12 25	Below >500 200-500 <200 m 1 15 30		
WILDLAND URBAN INTERFACE WILDFIRE THREAT SCORE					/55		
TOTAL WILDFIRE THREAT SCORE					/295		
* Proceed only if Fuel risk total is >20.							
** Proceed to Structural component only if Wildfire Threat Behaviour Score is >95 for untreated polygons.							
Wildfire Behaviour Threat Class (check applicable class)			Wildland Urban Interface Threat Class (check applicable class)				
Low	0-40	<input type="checkbox"/>	Low	0-13	<input type="checkbox"/>		
Moderate	41-95	<input type="checkbox"/>	Moderate	14-26	<input type="checkbox"/>		
High	96-149	<input type="checkbox"/>	High	27-39	<input type="checkbox"/>		
Extreme	>149	<input type="checkbox"/>	Extreme	>39	<input type="checkbox"/>		

Last Updated: January 24, 2013





## Appendix 6 – FireSmart Community Plan Agenda and Meeting Invite - Partners

----- Forwarded message -----

From: **James Kostuk** <jkostuk@cityofgp.com>

Date: Thu, Sep 26, 2019 at 8:35 AM

Subject: FireSmart Community Plan Agenda

To: Richard Sali <rsali@cityofgp.com>, Lydia Sadiq <lsadiq@cityofgp.com>, Kase DeVries

<kdevries@cityofgp.com>, Kent Bowman <kbowman@cityofgp.com>, Lindsey Juniper

<ljuniper@cityofgp.com>, Jonathan Craig <jcraig@cityofgp.com>, Joe Johnson

<jjohnson@cityofgp.com>, Mike Kingsbury (Mike.Kingsbury@gov.ab.ca)

<Mike.Kingsbury@gov.ab.ca>, Ryan Ropcean <rropcean@aquatera.ca>,

Jessica.Lockhart@gov.ab.ca <Jessica.Lockhart@gov.ab.ca>, Dan Lemieux

(dlemieux@countygp.ab.ca) <dlemieux@countygp.ab.ca>,

shiftingmosaicsconsulting@gmail.com <shiftingmosaicsconsulting@gmail.com>,

john@davieswildfire.com <john@davieswildfire.com>, Preben Bossen

<pbossen@cityofgp.com>, Trevor Grant <tgrant@cityofgp.com>, tgreen@countygp.ab.ca

<tgreen@countygp.ab.ca>, darcar1@telus.net <darcar1@telus.net>, Shannon.dunfield@ahs.ca

<Shannon.dunfield@ahs.ca>

Cc: Steve Larsen <slarsen@cityofgp.com>, Benjamin Sargeant <bsargeant@cityofgp.com>,

Jake Pruden <jpruden@cityofgp.com>, Dennis Mossey <dmossey@cityofgp.com>

Good Afternoon,

On behalf of the City of Grande Prairie, I would like to extend this invitation to you, or a representative of your organization, to attend our first group discussion and knowledge sharing meeting for the development of our Urban Interface/Wildfire Protection Plan. The focus of our efforts and this discussion will be on the south Bear Creek area ( 68<sup>th</sup> avenue south). We are keen to ensure we have a comprehensive plan moving forward which addresses the reduction and mitigation of hazards and threats resulting from wildfire.

Where:

Pete Eagar Fire Station

8111 – Resources Road

Training Room

When:

MONDAY, OCTOBER 21, 2019

09h30 Registration



10h00 Welcome and Round-table Introductions

10h15 Introduction to FireSmart and terminology

10h30 Background and description of City of Grande Prairie Project

10h45 Questions, discussion, suggestions, and knowledge sharing from participants

11h50 Closing

Should participants have more information to share, our team will remain available from 13h30-16h30.

We look forward to hearing from you about your attendance of this meeting and participation in this project.

Sincerely,

**James Kostuk**

**Fire Marshal**

**Grande Prairie Fire Department**

**780-538-0400**



## Appendix 7 – FireSmart Community Plan Agenda and Meeting Invite – Platoon Chiefs

----- Forwarded message -----

From: **James Kostuk** <jkostuk@cityofgp.com>

Date: Thu, Sep 26, 2019 at 10:38 AM

Subject: FireSmart Community Plan - Operations Meeting

To: Steve Larsen <slarsen@cityofgp.com>, Trevor Grant <tgrant@cityofgp.com>, Benjamin Sargeant <bsargeant@cityofgp.com>, Jake Pruden <jpruden@cityofgp.com>, Dennis Mossey <dmossey@cityofgp.com>

Cc: Preben Bossen <pbossen@cityofgp.com>, shiftingmosaicsconsulting@gmail.com <shiftingmosaicsconsulting@gmail.com>, john@davieswildfire.com <john@davieswildfire.com>

Good Morning,

I'm glad you are all interested in engaging in this process.

We have scheduled a second meeting with our consultants.

It will take place following the group meeting on Monday. This will allow our consultants a comprehensive understanding of what's going on at the ground level along with concerns/guidance from the group meeting which will allow for a more effective discussion with Ops.

**Tuesday, October 22, 2019**

**13:00**

### **Station 1**

Prior to the meeting can you do some prep work.

I have attached a PDF – FireSmart Guidebook for community protection

Please review the following within the guidebook:

Wildfire Preparedness Guide template Option #2, Located on p. 76

Discussion items include:

- access points,
- ops. perspective,





- Water supply
- Staging areas
- What do you think about it all
- Consultants will share what they have found, their thinking and early recommendations

Our consultants are:

1) Sonja E.R. Leverkus PhD PAg RPBio FIT EP

Ecosystem Scientist and AFE Certified Wildland Fire Practitioner

Shifting Mosaics Consulting

2) John Davies – Wildfire Management Specialist

I hope all of you can make it.

If you would like to tour the area prior let me know and I can take you

Thanks

**James Kostuk**

**Fire Marshal**

**Grande Prairie Fire Department**

**780-538-0400**