VILLAGE OF BURNS LAKE

COMMUNITY WILDFIRE PROTECTION PLAN UPDATE

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Acknowledgments - 2017

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Cindy Shelford – Burns Lake First Nations Community,

Cliff Manning – Forest Protection Technician, Nadina Forest Zone, BC Wildfire Service.

Daniella Oake – Planning Supervisor, Hampton Affiliates,

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Shannon Irvine – Fuel Management Specialist, Wildfire Branch, Northwest Fire Centre,

Sheryl Worthing – Chief Administrative Officer, Village of Burns Lake,

Steve Capling – RPF, DWB Consulting.

Executive Summary

In 2015 the Village of Burns Lake initiated an update to the 2007 Community Wildfire Protection Plan due to modifications of previous prescriptions and changes to forest fuel dynamics and wildfire hazard.

The following report followed the procedures outlined by the 2015 (approval year) and 2017 Strategic Wildfire Prevention Initiative (where applicable), managed by the Union of BC Municipalities (UBCM), to highlight areas of unacceptable hazard within a 2km radius of the town of Burns Lake (i.e. the Wildland Urban Interface).

Primary recommendations from the 2007 Report have not been repeated even though many did not come to be implemented. Much of the area that would be suitable for high priority actions is located outside of the Village of Burns Lake. The Village acknowledges that there are limited resources available to manage and implement fuel management treatments. The Regional District has indicated that the Ministry of Forests, Lands and Natural Resource Operations should be responsible for and provide necessary funding to manage fire mitigation issues on Crown Land. Amending bylaws to increase the uptake of more focused fire protection elements in design and structure material usage is an arduous process. Provincial upgrades to Building codes and subdivision development requirements are being developed and implemented.

One of the most pressing and useful actions that can be implemented in the community is the FireSmart Program. The Village has put effort into implementing FireSmart and staff is encouraged by the uptake and interest of local residents in incorporating FireSmart principles into the management and reduction of fire hazard on private property.

Key Fuel Management treatments around subdivisions and structures are either in place or are scheduled for maintenance or funding application.

At the Landscape level, local Licensees are looking at implementing large scale Fuel Management projects through the Forest Enhancement Society of BC.

Treatment units have been identified and described for areas of high and extreme wildfire threat within the Wildland Urban Interface. The treatments are aimed at altering the fuel structure and composition to improve the management and control of a wildfire, should one occur. The following table summarizes the key areas of concern. The fuel types illustrated in these areas are susceptible to fires of high intensity and rates of spread. The proximity to structures, slope and aspect were other key factors in rating these fuel types as High or Extreme.

Summary of CWPP Recommendations – 2019

Table 1: Summary of Recommendations

#	*Recommendation*	*Responsibility/Funding Source*	*Next Steps*
1	Implement Fuel management re-treatment on 31.9 ha.	VBL - IA Crew may be able to assist with most of the units.	Contact BCWS at Burns Lake; conduct public notification; Apply for SWPI funding if IA Crews not available; Prepare Prescriptions, refresh bdy layout as needed.
2	Implement Fuel Management Treatment on 16.0 ha.	VBL - IA Crew may be able to assist with most of the units. For units the IA Crew can't address, apply to SWPI for Prescription funding and then Operational Treatment Funding / VBL.	Contact BCWS at Burns Lake; conduct public notification; Apply for SWPI funding if IA Crews not available; Prepare Prescriptions, Do bdy layout.
3	Support Community Forest & Licensees with proposals to FESBC.	Proponents (Community Forest & Licensees)/ FESBC	Discuss how VBL can assist proponents with applications & proposals to FESBC.
4	Undertake Fire modelling for the Spud Mountain ridge - high visibility area & overlap with VQOs.	VBL to work with FLNRO & BCWS/ FESBC or Ministry Landscape Level Planning.	Schedule meeting(s) with FLNRO/BCWS to discuss process and proposal preparation.

Table 2 identifies recommended CWPP priorities for the implementation of Fuel Management Treatments. Some 50 hectares of area are located throughout the Area of Interest at a projected cost of approximately $200,000 for implementation. Some of the identified area is previously treated ground that requires re-treatment to achieve current Fuel Management objectives.

Table 2: CWPP Treatment Summary Recommendations

CWPP Treatment Summary						
TU			**Area (Ha)**	**Avg Cost/unit**	**Cost**	**Treatment Summary**
1-2	Ski Club	New	12.6	$6,000.00	$75,600.00	Fell, limb, and buck dead trees; cut poor form/diseased mature stems; prune live lower limbs on green conifers; cut > 95 % immature conifers, as required to reduce laddering.
1-3	Osatiuk Road	Re-trt	2.9	$800.00	$2,320.00	
4-1 to 4-3	Clearview Drive	Re-trt	19.9	$1,000.00	$19,900.00	
5-1	Rod Reid Trail	Re-trt	0.7	$1,200.00	$840.00	
5-4	Burns Lk Hts Trail	Re-treat & blowdown.	6.1	$5,000.00	$30,500.00	
11-1	Kager Lk Rec Site & Trail	New	2.2	$6,000.00	$13,200.00	
11-1A	Boer Mtn. Bike Trails	New	1.2	$6,000.00	$7,200.00	
12-5	Tintagel North	Re-trt	2.3	$1,000.00	$2,300.00	
		Total Ha:	**47.9**		$151,860	

Avg. Cost / Ha:	$ 3,170.35
Implementation and Admin. $/ha:	$ 600
Projected Cost for Treatment Prescriptions, Surveys and Layout: $ 20,000	

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SECTION 1: Introduction - 2017

The CWPP update is intended to identify current hazard classes, develop fuel management strategies and identify potential treatment areas. Knowing the hazards and conducting Fuel Management treatments can reduce potentially adverse fire behaviour from wildfires encroaching the town perimeter and fires that may initiate from within the town and travel outwards through crown land. Carrying out operational Fuel treatments and implementing FireSmart can also lead to improving structure survivability.

The plan addresses fuel management based on the following five criteria:

1. Preparation will be conducted in cooperation with the Ministry of Forests, Lands and Natural Resources Operations and Fire Centre Fuel Management Specialist.
2. Treatments will include measures to lower the Wildland Urban Interface Wildfire Threat Rating by addressing a combination of the following:
3. Reduce or modify forest fuels adjacent to structures to reduce the likelihood of ignition and potential for extreme fire behaviour resulting in negative impacts to values.
4. Treatment areas under prescription for fuel treatment will be undertaken and signed off by a Registered Professional Forester.
5. Define the Wildland Urban Interface and associated Wildfire Threat Rating(s) for the given treatment area(s).

In addition, this plan will include FireSmart recommendations and activities. Separating the structures from the forest through FireSmart landscaping and activities is critical to wildfire mitigation and will reduce the potential impacts to structures from wildfire.

1.1 Purpose - 2017

The purpose of the CWPP update is to identify current wildfire risks within and surrounding the Village of Burns Lake, to describe the potential consequences if a wildfire was to impact the village, and to examine possible ways to reduce the wildfire risks.

The original CWPP was completed in 2007 with a grant from UBCM and in-kind support from the Village. Since then, the Provincial Government has made additional grants available to local governments through the Union of BC Municipalities (UBCM) to update community wildfire protection plans (CWPP). The Village of Burns Lake capitalized on this funding to complete an update to the plan as the availability, structure, and composition of the surrounding fuels may have changed and could pose new or increased wildfire threat to the community.

The update defines fire threat to human life, property and critical infrastructure within the Village of Burns Lake community boundary, identifies recommendations to mitigate the threats, and presents a summary for implementing risk reduction treatments.

1.2 CWPP Planning Process - 2017

The planning process provides a detailed framework to establish specific actions to:

1. Reduce likelihood of wildfire entering the community
2. Reduce impacts and losses to property and critical infrastructure
3. Reduce negative economic and social impacts to the community.

The Village of Burns Lake retained DWB Consulting Services Ltd. to initiate a grant application to UBCM. Susan McKellar, RPF, was assigned Project Lead with internal subject matter expertise from Steve Capling, RPF, CWPP Specialist.

The SWPI 506 grant was approved July 8, 2015. Upon grant approval, a post approval meeting was organized to include key stakeholders to the project.

The CWPP Update Committee included original members of the 2007 CWPP including Municipality of Burns Lake, Burns Lake Community Forest, First Nations, fire officials, and major licensees. The Regional District of Bulkley Nechako (RDBN) was invited to participate in this committee but unfortunately, declined participation in this project. The meeting occurred August 12, 2015, and included the following participants: wildfire specialists, professional Foresters, First Nations, community planners, public and government organizations, and local residents who have familiarity and understanding of the original CWPP.

Bob and Rosanne Murray - Woodsage Management Inc.,

Cindy Shelford – Burns Lake First Nations Community,

Cliff Manning – Forest Protection Technician, Nadina Forest Zone, BC Wildfire Service.

Daniella Oake – Planning Supervisor, Hampton Affiliates,

Frank Varga - Operations Manager, Burns Lake Community Forest,

Jim McBride – Retired Fire Chief, Village of Burns Lake,

Kerry Martin – Previous Operations Manager, Burns Lake Community Forest,

Robert Krause – Director of Protection Services, Village of Burns Lake,

Shannon Irvine – Fuel Management Specialist, Wildfire Branch, Northwest Fire Centre,

Sheryl Worthing – Chief Administrative Officer, Village of Burns Lake,

Steve Capling – RPF, DWB Consulting.

Sheryl Worthing, Chief Administrator Officer of the Village reported and gained approval, where necessary from the Council at the Village of Burns Lake. In addition, Cliff Manning, Forest Protection Technician, Nadina Forest Zone, BC Wildfire Service provided community specific fire expertise and was periodically consulted to obtain information for this report. Shannon Irvine was accountable for the approval of program objectives and Sheryl Worthing was responsible for the approval of all facets of the project. Other stakeholders with high value infrastructure (Fortis and BC Hydro) were informed this project was under way.

The initial meeting in August, 2015 discussed scope of project and CWPP expectations as outlined by Shannon Irvine. See Appendix A for minutes of post approval meeting.

Susan McKellar and Steve Capling then completed a field overview of the CWPP area and conducted field sampling of CWPP treatment areas with Bob Murray (author of 2007 CWPP), Jim McBride, and Sheryl Worthing. In addition, Bob Murray, Susan and Steve conducted field plot data collection.

In August, 2015, DWB requests PSTA Data package from BC Wildfire Service Branch and initiated in-kind mapping services from Burns Lake Community Forest Ltd.

In November, 2015, the village applied for Fire Smart funding. The funding was approved.

DWB received PSTA data package from BC Wildfire Service Branch in March, 2016 which allowed the information review to begin and the start of the planning phase of the project.

The CWPP Update Area of Interest was finalized in June, 2016. The original 2007 AOI boundary was reviewed and risks associated with wildfire within the community and the wildfire threat was reviewed with local stakeholders including Bob Murray, Jim McBride, Cliff Manning, and Shannon Irvine. In reviewing the area of interest, the Natural Fire Regime and Ecology, Provincial Strategic Threat Analysis, and Local Wildfire Threat Analysis, proximity to buildings, and natural fire barriers of the wildfire/urban interface were considered. The area was approved by committee members, the Council, Shannon Irvine and Sheryl Worthing.

Plot locations were finalized in June, 2016. In June – August, 2016, there was discussion and consultation with Wildfire branch and UBCM re: pending changes to the CWPP program and data collection requirements. It was recommended to delay field data collection until the new 2017 program was rolled out. Unfortunately, the existing UBCM project funding regime did not allow the project to be delayed any further.

With the delay in data and pending changes to the UBCM program, the VBL requested and was granted a project extension to December 31, 2016.

Field work was completed during September and October, 2016 and data analysis and project write up began November, 2016.

In late November, 2016, the 2017 CWPP Update program was released with new standards. Although the Village of Burns Lake received funding under the 2015 standard, they authorized the document to be written to the 2017 standard, where applicable. Note, some parts of Sections 4 and 5 of this report were written to the new 2017 standard. The field data was collected to 2015 standard as field work occurred prior to release of the new 2017 standard.

In 2016, there were two transitions within the planning committee. Jim McBride retired and Kerry Martin left Burns Lake Community Forest. Kerry was replaced by Frank Varga and Jim was replaced by Robert Krause.

In December, 2016, an additional submission extension was requested and approved to February 28, 2017.

In February, 2017, a final extension was requested and approved to March 31, 2017.

SECTION 2: Local Area Description -2017

The name Burns Lake was derived in the 1800s. Before the discovery of this area, a huge forest fire had killed off and blackened most of the local forest. Packers and cattle drivers, therefore, referred to the area as "Burnt Lake." Over the years, the name developed into Burns Lake (2016, http://www.hellobc.com/burns-lake/culture-history.aspx).

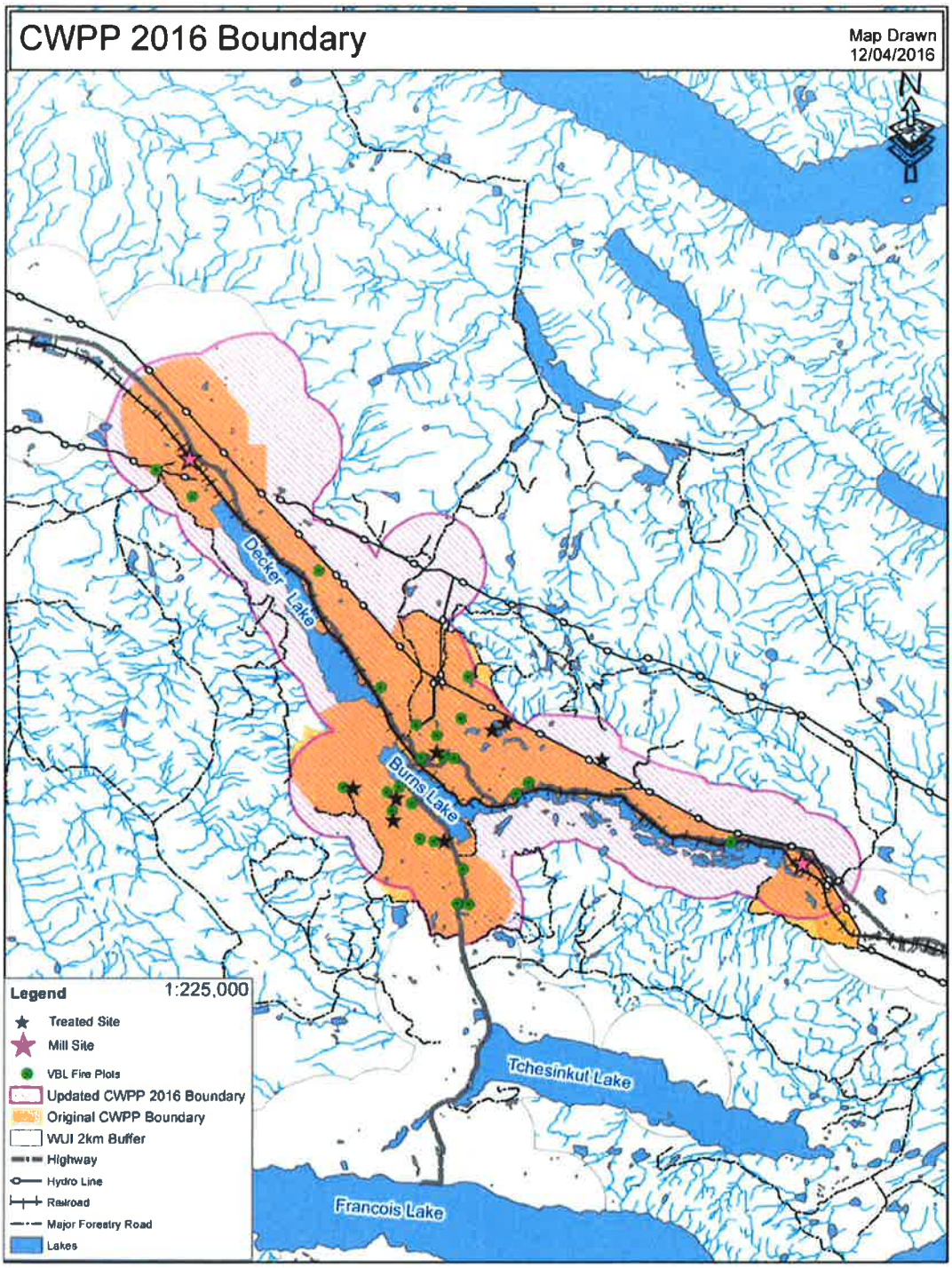
Several groups of First Nations called the area around Burns Lake home long before Europeans settled the town in 1911. Workers who helped build the Grand Trunk Pacific Railway, the rail line that now reaches the coastal port city of Prince Rupert, settled in the area once they finished work. The community expanded as more settlers arrived, lured by the low price of land. In 1923, the Village of Burns Lake was incorporated and canvas tents and wooden cabins began to form an actual community.

Today, Burns Lake is the 'heart' of the Lakes District, located on Highway 16, within Bulkley-Nechako Regional District 51. This community is governed by an elected Council comprised of the Mayor and four Councillors.

2.1 CWPP Area of Interest - 2017

The Area of Interest (AOI) (see figure 1) is the wildland urban interface (WUI) which is the area within 2 kilometers of the community of Burns Lake with a minimum density of 6 structures per square kilometer. The total area covered by the updated CWPP Area of Interest is 32,603.9 hectares.

Figure 1 - CWPP Boundary Map



2.2 Community Description - 2017

Burns Lake including the Burns Lake Band and the Lake Babine Nation is located approximately 220 kilometers west of Prince George. The Village of Burns Lake has a population of 2,029 persons, the Burns Lake Band has a population of 60 persons, and the Lake Babine Nation has a population of 1500 and Burns Lake is the supply centre for approximately 8,000 people within the neighbouring rural communities including Electoral Area B. (2016, http://www.rdbn.bc.ca/economicdevelopment/regional-information/regional-profile/municipality-information/burns-lake).

Electoral Area B (Burns Lake Rural), surrounds the Village of Burns Lake and has a small but stable population of 2,102 and includes unincorporated communities such as Decker Lake, Donalds' Landing, Palling, Rose Lake, Sheraton, and Tintagel. The residents of the rural area have strong participation rates in the local economy, and a relatively high percentage hold college and/or apprenticeship certifications. Residents tend to be employed in agriculture, manufacturing and public administration. (2016, http://www.rdbn.bc.ca/economicdevelopment/regional-information/regional-profile/municipality-information/burns-lake). The Wet'suwet'en First Nation is located in Electoral Area B.

Burns Lake is an outdoor enthusiast's paradise as this location has thousands of kilometers of pristine shoreline close to town. The Lakes District is a paradise for fishers, boaters, kayakers, canoers, paddle boarders and other water sport enthusiasts. Ten minutes from downtown Boer Mountain and the Burns Lake Bike Park launch miles of classic single track and some of the best downhill trails you'll find anywhere. With trails open to easy, intermediate, advanced and expert riders, there is something for almost everyone (2016, http://www.visitburnslake.ca).

The retail sector in Burns Lake is quite robust. A host of supply, service and transportation related businesses serve the local sawmills and the community. The social infrastructure includes the Burns Lake & District Hospital, four primary/elementary schools and one high schools, a campus of the College of New Caledonia, provincial government social services office, a library and a museum.

Omineca Ski Club, the Lakes Outdoor Recreation Society, and the Burns Lake Mountain Biking Association continue to invest considerable time, funds, and resources to develop cross country skiing, hiking, and mountain biking trails for local and visiting outdoor enthusiasts. Specific data are not available regarding the funds invested, kilometers of trails and economic value these trails provide to the local economy.

The forest sector remains the cornerstone of this local economy. Babine Forest Products Ltd., (located 20 kilometers east of the Village) and Decker Lake Forest Products Ltd. (located 20 kilometers west), operate on Highway 16 , Pinnacle Pellet Plant (other side of Babine Forest products), and Pacific Timberko River Timber Ltd (within industrial site) are the major contributors to the community. The service industry including tourism, ranching and farming have a relatively smaller portion of the economic base.

Unfortunately, in January 2012, Babine Forest Products, the largest employer, was lost to an explosion and fire (2011, Statistics Canada- National Household Survey). The village worked with the Province of British Columbia and RDBN to recover from this loss and in 2015, Hampton Affiliates resumed operations at Babine Forest Products Ltd. In addition, harvesting

beetle kill wood has presented opportunities for the manufacturing sector and the bio-energy sector.

The most recent statistical data on labour force for Burns Lake was 2011 with 920 people. Approximately a quarter (25%) of that population worked in the manufacturing sector. Retail trade employed 11% and public administration employees 10%. (http://www.rdbn.bc.ca/images/pdf/EconDev/Profiles/RDBN_BurnsLake_WEB.pdf).

As 2011 is outdated, the authors update information to 2016 through personal communication. Table 3 illustrates the 2016 major employers and number of employees along with percentages in Burns Lake.

Table 3: 2016 Major Employers and No. of Employees in Burns Lake, BC

2016 Major Employers and No. of Employees in Burns Lake, BC*		
Employer	**No. of Employees**	**%**
Hampton Affiliates - Babine Forest Products. Note: Additional 100 forestry related jobs	110	14%
Hampton Affiliates - Decker Lake Forest Products. Note additional 40 forestry related jobs	95	12%
Lake Babine Nation	110	14%
Lakes District Maintenance	50	7%
Northern Health	175	23%
Pinnacle Burns Lake	54	7%
Regional District	25	3%
Tahtsa Timber (Pacific Timber Mill)	109	14%
Village of Burns Lake	40	5%
Total	**768**	**100%**

**Source: 2017, Personal Communication, Economic Development Officer of Burns Lake, Northern Health, and College of New Caledonia, and Village of Burns Lake*

The Burns Lake Band has four reserves within the CWPP boundary: Poison Creek IR 17, Poison Creek IR 17A, Sheraton Creek IR 19 and Burns Lake IR 18. Only one, Burns Lake IR 18 is situated within Village boundaries.

As outlined in section 2.5.2, the Lake Babine Nation completed a Community Wildfire Protection Plan (CWPP) in 2011.

The Wet'suwet'en First Nation (WFN) (formerly the Broman Lake Band) reserve at Broman Lake lies outside the Village municipality but within the CWPP interface area.

Woyenne is the largest community in the Lake Babine Nation (LBN). It is within the Village boundary and is therefore included within this plan. Representatives from LBN are on the CWPP Committee. The reserve area is 60 hectares (148 acres) in size, with a growing population of more than 940 people residing in 147 homes. The Lake Babine central administration office is also located on the Woyenne Reserve.

The Burns Lake Native Development Corporation is a legal entity which jointly involves the Burns Lake Band, Cheslatta Carrier Nation, Lake Babine Nation, Nee Tahi Buhn, Skin Tyee, and Wet'suwet'en First Nation. It oversees several commercial companies with ventures in

contracting for road construction, small scale salvage, trucking, logging, and silviculture. It also provides loans for small businesses and has been successful in employing local people.

Most of the aboriginal groups are involved in economic development. Such endeavours include the salvage and utilization of flooded timber within the Nechako Reservoir, known as the Nechako Salvage Project; mountain pine beetle salvage; as woodlot licensees; milling; trucking and recreation trail rehabilitation.

The municipality of Burns Lake Fire and Rescue services hold jurisdiction over fire protection within the Village of Burns Lake and within an eight kilometer radius service area within the Regional District of Bulkley Nechako (Electoral Area B). The agreement allows the department to action any wildfires on Crown Land within the 8 km radius and then bill costs directly back to BC Wildfire Service.

The main ingress/egress routes are east or west on Highway 16.

2.3 Past Wildfires, Evacuations and Impacts

According to the BC Wildfire branch the current 10-year average*, taken from 2005 to 2014, is 1,756 fires, 39.8% caused by people and 60.2% caused by lightning (2016, http://www2.gov.bc.ca/gov/content/safety/wildfire-status/wildfire-statistics/wildfire-averages).

In 2016, the BC Wildfire Service responded to six new wildfires in the Northwest Fire Centre, the largest active wildfire covered about 30 hectares and burned west of Dayeezcha Mountain about 44 kilometres southeast of Burns Lake. Another fire, about 57 kilometres southeast of Burns Lake, covered about four hectares. No structures were threatened. (https://news.gov.bc.ca/releases/2016FLNR0063-000599).

In 2014 BC saw the third worst wildfire season in history with the largest fire of the year known as the Chelaslie River between Anahim Lake and Burns Lake, consuming 1,330 square kilometres (2016, http://www.cbc.ca/news/canada/british-columbia/b-c-forest-fires-2014-was-3rd-worst-season-on-record-1.2782406).

In 2010 the **Binta Lake Wildfire**, south of Burns Lake, grew from 7,000 hectares to about 35,000 hectares in a 12-hour period due to dry conditions and strong winds. At its final size of 40,000 hectares (400 square kilometres) this was the single largest blaze of 2010 in the Province, and resulted in evacuation orders and alerts (2016, http://www2.gov.bc.ca/gov/content/safety/wildfire-status/wildfire-statistics/major-historical-wildfires.

According to Robert Krause, Director of Protective Services at the Village of Burns Lake, there were a total of 111 fire starts with an average of 11 fires per year, within and around the Village of Burns Lake for the period from 2007-2016 (see Table 4). Development of homes in the valley has spread outside of the village - often into areas with a high spruce component.

Table 4: Wildland Fire Starts – Village of Burns Lake, 2007-2016

Wildland Fire Starts - Village of Burns Lake 2007-2016												
Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total	Average
Fire Starts	14	3	22	23	4	11	18	6	3	7	111	11

The village successfully actioned all noted fires.

Emphasis on the community wildfire protection plan update and fire smart initiatives became a priority in preparation for wildfire management within the community.

2.4 Current Community Engagement

Various initiatives have been completed to mitigate wildfires in and around the community of Burns Lake. The Village of Burns Lake completed a CWPP in 2007 and in 2011 the Lake Babine Nation initiated the development of a Community Wildfire Protection Plan (CWPP). In addition, in 2016, the Village of Burns Lake received Fire Smart funding to engage and educate the community.

Operational treatments conducted through the Village of Burns Lake based on SWPI plan were completed. In addition, British Columbia Wildfire Service Crew projects were completed. Treatment locations have been identified on treatment map. See appendix 1.

Stakeholders including Comfor, Hampton Forest Products, Lake Babine Nation, Babine Forest Products, have fire management strategies to mitigate wildfire threat within the Crown land areas they are accountable for.

The 2007 CWPP produced recommendations for 'Fire Planning Units".

2.5 Linkages to Other Plans and Polices

The document considered a variety of plans that may impact the area of interest of the CWPP. The following references the plans that are relevant to the wildfire interface of the AOI.

2.5.1 Local Authority Emergency Plan

As required by law, local governments must prepare emergency plans and maintain an emergency management organization. This is to ensure the safety of citizens when a situation escalates beyond the first responder level.

The Village of Burns Lake maintains an Emergency Preparedness Plan. The following sections of this plan refer to fire.

Section 7:

7.8 Fire – Industrial 7-26

7.9 Fire – Interface and Wildfire 7-29

Section 8

8.1.8 Fire – Urban / Industrial 8-8

8.1.9 Fire – Interface and Wildfire 8-9

The Village of Burns Lake Emergency Response plan outlines the sub-divisions where emergency responders must ensure the vehicles turn around upon entry. Further, all future subdivisions must have a specific turn radius for emergency response trucks.

The Regional District of Bulkley Nechako Emergency Preparedness Plan drafted in 2008, outlined also has an emergency plan. This plan has been developed to encourage continuity in a permanent, all-risk community program for managing emergencies with the area of jurisdiction. The following area is covered for Burns Lake.

Electoral Areas "B/E" (Burns Lake Rural and Francois / Ootsa Lake Rural)

9.2-1 Electoral Areas "B/E"

9.2-2 Village of Burns Lake

9.2-3 Rural Communities of Electoral Area "B"

9.2-4 Rural Communities of Electoral Area "E"

9.2-5 Burns Lake Rural Fire Protection

9.2-5a Primary Dwellings within the Burns Lake Rural Fire Protection

9.2-6 Southside Rural Fire Protection Local Service Area

9.2-6a Primary Dwellings within the Southside Rural Fire Protection Local Service Area

9.2-7 MOF Fire Zones within Electoral Area "B" and "E"

9.2-8 BC Ambulance Service Areas within Electoral Areas "B" and "E"

9.2-9 RCMP Service Areas within Electoral Areas "B" and "E"

Section 7.9 of this plan details Fire -Interface and Wildfire for the Electoral Areas B/E.

2.5.2 Affiliated CWPPs

In 2011, the Lake Babine Nation initiated the development of a Community Wildfire Protection Plan (CWPP) to identify and address the wildfire hazard and risk present on land in and around IR #27 Woyenne. This plan describes the areas within the Woyenne community which are most at risk for wildfire, identifies measures that can be taken to decrease those risks and outlines a plan of action to carry out these measures.

The CWPP addresses wildfire threat within the boundaries of the Woyenne Reserve. Threats were determined based on the fuel, topography, weather, and position of the development on the landscape. Fuel management treatments were prescribed for areas deemed as extreme or high hazard based on the above criteria (2011, Woyenne CWPP).

Within the Woyenne Reserve, one priority treatment area exists at the north end of Center Street near the power substation. This area is located in the north-central portion of the Reserve and will be referred to as Unit 1 A. Unit 1 A is seen as an ignition source that could carry fire either directly or by spotting to other locations within the Reserve lands. The area is 6.2 ha in size with a threat class of High.

2.5.3 Local Government and First Nation Plans and Policies

The Regional District of Buckley Nechako (RDBN) Board of Directors recently formed the RDBN Agricultural Committee in order to work on Agriculture opportunities throughout the region as agriculture is one of the key sectors in a sustainable economy and provides food security to the region. The details surrounding this committee and program are not yet available (2016, http://www.rdbn.bc.ca/economicdevelopment/regional-information/regional-profile/municipality-information/burns-lake).

In 2013, a Village Economic Development Department was established which serves the Village of Burns and Regional District of Bulkley Nechako Electoral Area B. This department

developed the Economic Development Strategic Plan. This plan sets out the direction and vision for Economic Development in the Burns Lake area.

First Nations Emergency Services Society (FNESS) is the funding source for wildfire management within the reserve lands. It is recommended that the Bands and the Village develop mutual strategies for wildfire mitigation to avoid duplication of efforts. Representatives of the Bands have been made aware of the funding opportunity through FNESS.

2.5.4 Higher Level Plans and Relevant Legislation

The Lakes District Land and Resource Management Plan (LRMP) provides broad direction for sustainable use of Crown land and resources. The document encompasses the Village of Burns Lake and First Nations, who were not involved in the LRMP process. However, First Nations concerns with respect to archaeological, cultural, and heritage values were communicated. Chapter 4 represents how resource management zone direction may interplay with the CWPP.

Any proposed treatments on Crown Land will fall under the jurisdiction of Ministry of Forest Land Natural Resource Operation (FLNRO) & the Forest Range Practices Act (FRPA) /(Forest Planning and Practice Regulations (FPPR). Areas within the Village of Burns Lake will follow municipal Bylaws & guidelines.

Ground-based treatment plans must be consistent with government set higher level objectives that exist for proposed treatment areas. Existing higher level objectives, strategies, guidelines and current plans will be considered during prescription development for new treatment plans proposed within the Community Wildfire Protection Plan (and subsequent fuel management prescriptions). Any applicable objectives developed in higher level planning processes introduced during the lifespan of this CWPP document will be reviewed at that time.

Any harvesting carried out in the WUI will be guided by FRPA/FPPR and FLNRO. Prescriptions prepared for proposed Treatment Units will ensure treatments follow the relevant Acts and Regulations. Various Government Action Regulations (GARs) may require that specific actions are taken prior to any cutting being approved by FLNRO.

2.5.5 Ministry or Industry Plans

Photo - Pine Beetle infestation adjacent to Ootsa Lake. Courtesy of FLNRO.

The Ministry of Forests, Lands and Natural Resource Operations is the Province's land manager, responsible for stewardship of Provincial Crown land, cultural and natural resources that includes public land in and around Burns Lake. The Ministry ensures the sustainable management of forest, mineral and land-based resources, supports activities that lead to benefits for all British Columbians both economically and environmentally, and facilitates public access to a wide range of activities such as hunting, fishing and recreation (2016, http://www.bcbudget.gov.bc.ca/2016/sp/pdf/ministry/flnr.pdf#page=5).

The Nadina Forest District maintains accountability for the Burns Lake area and is located on roughly 2.6 million hectares in north central British Columbia. The District extends from Tweedsmuir Park in the south to the Babine mountains in the north and from Hungry Hill in the east to the Endako River in the east.

The extent to which local governments are involved with fire and fuels management, and associated interface fire risk in a given community is community specific, and dependent on the application of legal powers to undertake policy and bylaw development and bylaw enforcement (2017, http://member.abcfp.ca/web/Files/policies/Fire_Fuel_Management-Interim_Guidelines.pdf).

The BC Provincial Coordination Plan for Wildland Urban Interface (WUI) Fires describes the provincial response to a major WUI fire event.

The BC Wildland Fire Management Strategy, 2010, provides an overview of BC's proactive approach to managing wildland fire. On Crown land, fire and fuels management in BC is regulated by the Wildfire Act and Wildfire Regulation which was proclaimed on March 31, 2005.

This legislation replaced the requirements for fire related activities that were previously outlined in the Forest Practices Code of British Columbia Act and the Forest Fire Prevention and Suppression Regulation (2017, http://member.abcfp.ca/web/Files/policies/Fire_Fuel_Management-Interim_Guidelines.pdf) .

The BC Wildfire Service is tasked with managing wildfires through a combination of wildfire prevention, mitigation and suppression strategies, on both Crown and private lands outside of organised areas such as municipalities or regional districts.

The Burns Lake Rural Fire Protection Area services are provided by Burns Lake Fire & Rescue. Burns Lake Fire & Rescue is operated by the Village of Burns Lake. The Regional District of Bulkley-Nechako provides annual funding to support operations and capital purchases. Burns Lake Fire & Rescue provides the following services to the Burns Lake Rural Fire Protection Area residents:

- Structural firefighting;
- Road Rescue;
- Medical First Response;
- Fire prevention;
- Volunteer fire fighter training; and
- Public Fire Safety Education.

There are two Community Forests that have operations within or around the CWPP boundary. The Burns Lake Community Forest has proposed forest harvesting plans within the WUI and relevant strategies will be discussed in the treatment section of this report. Burns Lake Community Forest operates license (K1A) within the CWPP boundary and covers a total of 89,109.2 hectares with an Annual Allowable Cut of 100,000 cubic metres in 2014/2015.

The Chinook Community Forest (CCF) was initiated to fulfil a provincial commitment to support opportunities to source timber for the rebuilt Babine Forest Products mill that experienced an explosion and fire on Jan. 20, 2012, resulting in loss of life. This CCF agreement covers 90,670 hectares and includes an allowable annual cut of 100,000 cubic metres for 2014/2015. The agreement includes eight partners consisting of the Regional District of Bulkley-Nechako, the Village of Burns Lake, Lake Babine Nation, Skin Tyee First Nation, Nee Tahi Buhn Indian Band, Burns Lake Indian Band (Ts'il Kaz Koh), Cheslatta Carrier Nation and Wet'suwet'en First Nation to help support continued forestry operations in the community.

There are two Forest Stewardship Plans (FSPs) that are relevant to the Burns Lake CWPP area; Burns Lake Community Forest Stewardship Plan and the Nadina District Forest Stewardship Plan. These plans describe the results and strategies for meeting government's objectives as set out in the Forest and Range Practices Act, which governs the activities of forest and range licensees in B.C. and sets requirements for planning, road building, logging, reforestation and grazing within the relevant operational jurisdiction. The Forest Licensees in the area will be

consulted to determine how Fuel Management work will be conducted where treatments are proposed on Crown Land. The 2016 Fire Management Stocking Standards will be used to guide any reforestation efforts carried out on completed treatment areas.

The Forest Health Strategy for the Nadina District (2016-2017) details the relevant forest health strategies and operational tactics for the district, including Burns Lake. Although the Mountain Pine Beetle epidemic has subsided, spruce bark beetle and hard pine rusts in managed stands pose an increased risk to timber supply (2017, https://www.for.gov.bc.ca/ftp/DND/external/!publish/Forest_Health/2016-2017_DND_Forest%20Health%20Strategy_Final.pdf).

The Ministry of Environment and BC Parks have jurisdiction within the AOI. BC Parks has completed Management Direction Statements for two parks; Dead Man's Island Park (2002) and Burns Lake Provincial Park (2003).

Management direction statements (MDS) provide strategic management direction for all protected areas that do not have an approved management plan. Management direction statements describe protected area values, management issues and concerns, a management strategy focused on immediate priority objectives and strategies, and, direction from other planning processes. While the MDS identifies strategies, the completion of all these strategies is dependent on funding and funding procedures. All development associated with these strategies is subject to BC Parks and Protected Areas Branch Impact Assessment Policy.

Dead Man's Island Park was established on October 31, 1933 by the Provincial Government with Order-in-Council 1377 under the authority of the Provincial Parks Act. The park was reclassified as a Class C Provincial Park on December 11, 1940 with Order-in-Council 1660. The park covers the entire 1 ha area of Dead Man's Island, which is at the western end of Burns Lake, southeast of the town of Burns Lake. Dead Man's Island Park is the smallest provincial park in BC.

Burns Lake Provincial Park covers 65 hectares on the south shore of Burns Lake, about four kilometres southeast of the community of Burns Lake with an area population of about 4,000. The small park lies within the asserted traditional territories of the Burns Lake Band, the Wet'suwet'en and the Carrier-Sekani Tribal Council.

No specific range management plans were identified within the WUI.

No specific Integrated Silviculture Strategies were identified within in the WUI.

SECTION 3: Values at Risk - 2017

Values-at-risk are a specific or collective set of natural resources and man-made improvements and/or developments that have measurable or intrinsic worth, and which could potentially be destroyed or otherwise altered by wildfire within the WUI. See Appendix for CWPP Overview Map.

3.1 Human Life and Safety

Within the Village of Burns Lake there are 846 private dwellings and 406 single detached dwellings. Within Electoral Area B 888 private dwellings exist.

Approximately 50% of the population and dwellings are located in the rural areas outside the municipal boundaries and within the community of Burns Lake and area of interest (AOI). Areas with high human activity are at a greater risk of fire starts. In addition, the mountain pine beetle epidemic contributes to ladder fuels that may ignite when lightning strikes occur.

Most recent statistical data illustrates that in 2011, the Village of Burns Lake was home to 2,209 residents and the electoral area B is home to 2102 residents. Table 5 illustrates the population and dwelling density in Burns Lake and Electoral Area B, (Burns Lake Rural Area).

Table 5: Population and Dwelling Density in CWPP Area in 2011

	Village of Burns Lake	Electoral Area B
Population in 2011	2,209	2,102
Total private dwellings	846	888
Single detached dwellings	406	
Population density per sq. km	309.7	0.6
Land area (sq. km)	6.59	3,632.09

http://www.rdbn.bc.ca/economicdevelopment/regional-information/demographics/census-data#2011-statistics-canada-community-profiles—electoral-areas

A large recreation area east of Burns Lake has been designated with emphasis on mountain biking and hiking which draws people to the community. The parking area is at Kager Lake where a hiking/biking trail circles the lake. There is a large deck/dock on the north shore of Kager Lake adjacent to the parking area. Twelve campsites (3 at parking area and 9 walk-in) surround Kager Lake. Connecting to the Kager Lake trail is the Long Lake hiking trail. Biking trails connect Kager Lake and the Burns Lake Bike Park (private land) to the west (which has its own parking area and posted maps). At the top of Boer Mtn. (via Boer Mtn. Road) are trailheads for Star Lake (hiking) and the Boer Mountain bike trails. Biking trails, 4 options: 3 single track trails, or 1 'jump-track' double track; all travelling between 3 to 5 kilometers down to Kager Lake 2016, (2016, http://www.sitesandtrailsbc.ca/search/search-result.aspx?site=REC32077&districtCode=RDSS&type=Site). These areas and activity may increase the likelihood and risk of wildfire threat in the area.

3.2 Critical Infrastructure

The transportation route running east to west through the Bulkley-Nechako region is Highway 16 with the majority of the Lakes District settlement following the Highway 16 (Yellowhead) corridor as it makes its way from Prince George through to Prince Rupert. Highway 16 is the main paved transportation route running east to west through the RDBN and is the transportation route for goods being shipped in and out of the region. It is also the main egress route for emergency evacuation.

The following provincial highways connect communities to the Highway 16 corridor:

- Highway 27 to Fort St. James from Highway 16 (Vanderhoof).
- Highway 35 to Francois Lake/Southbank from Highway 16 (Burns Lake).
- Highway 118 to Granisle from Highway 16 (Topley).

The community is served by a local hospital, an extended care facility, one high school and two elementary schools as well as the motels, service stations, and other businesses typical of small towns in northern B.C.

British Columbia's ports in Vancouver, Kitimat, Stewart and Prince Rupert are Asia's closest ports of entry on the west coast of North America, up to 58 hours closer than the ports of Los Angeles and Long Beach. British Columbia is the only gateway on the west coast of the Americas served by three transcontinental railways.

The Canadian National Railway follows the Highway 16 corridor from Prince George to Prince Rupert, with service through the RDBN. Currently, CN Rail is upgrading the rail line to accommodate an increase in traffic due to goods being shipped to Asia.

Prince George, to the east of the RDBN, is the regional trading centre for Northern BC, where CN Rails Intermodal Terminal is located. The Intermodal terminal is designed to support customers shipping to and from Asia through the Port of Prince Rupert.

VIA Rail operates 'The Skeena' passenger train, running from Jasper to Prince Rupert and back again, with stops in many of the communities within the RDBN. Passengers are able to disembark and take in the splendor of the communities on route. The journey passes through some of Canada's most scenic areas.

3.2.1 Electrical Power

BC Hydro supplies electrical power and Pacific Northern Gas supplies natural gas to the community. Both the BC Hydro transmission lines and the PNG pipeline follow the same corridor but are at times a little removed. All of these transportation routes and utilities transect the CWPP planning area.

Both the Ministry of Transportation and Highways and B.C. Hydro – Distribution Division have a right-of-way clearing program for removing dead/hazardous trees along their corridors.

3.2.2 Communications, Pipelines and Municipal Buildings

Telus is the telecommunication (phone, cable, and internet) provider to the community. In addition, a wireless network between Topley and Burns Lake provides cell coverage in that section.

There are a number of municipal buildings and properties including shops, water booster stations, water supply station, lift station, blower house, chlorine house, municipal office, Interpretive Centre, recreation centre, Heritage Centre, Museum, Anglican Church, playschool, and the public works foreman house.

The Public Works Crew maintains the local parks and the municipal entrance areas.

3.2.3 Water and Sewage

3.2.3.1 Water

The Village of Burns Lake water system is comprised of three supply wells located on Gerow Island, and is piped from there underwater, to the highlift station at the Public Works Yard. Currently there is a portable backup generator that could be used in the event of a sustained power loss.

The Public Works Crew maintains the water and sewer systems that serve residents of the municipality. Water lines are flushed each spring to remove sediment that builds up over the winter and helps maintain the system to reduce the need for repairs (2017, http://office.burnslake.ca/public-works/public-works-department/).

The Village has two water reservoirs totaling 500,000 gallons, and the water system is chlorinated. There are over 29 kilometers of water distribution lines serving the Village (2017, http://portal.burnslake.ca/).

For the rural areas, the fire department has access to three water reservoirs in the contracted area: two being located to the east on Highway 16, one located at the Freeport Trailer Park and the other being access to the pond located on private property on Highway 16 East. West of Burns Lake, the fire department has access to the water reservoir at Decker Lake Elementary School and the Village has jurisdiction to access this water supply in the event of a fire through a mutual aid agreement.

3.2.3.2 Sewage

The Village of Burns Lake maintains approximately 27 kilometers of sewer lines, 3 sewer lift stations and 7 sewage treatment lagoons. Upgrades are underway at the chlorine treatment facility, and twinning of the force main from the Pioneer pump station to the lagoons was completed in 2010 (2017, http://portal.burnslake.ca/).

3.3 High Environmental and Cultural Values

The Lakes District Land and Resource Management Planning (LRMP) process provides broad direction for the sustainable use of Crown land and resources in and around the Village of Burns Lake. A cursory review of the AOI area did not identify high value environmental objectives that are likely to be impacted by the treatments proposed in the CWPP. A status check of

polygons was not done in this review and is required at time of fuel treatment prescription development. While Cultural values are unlikely to be impacted by manual fuel treatment activities any new treatment proposals will be sent to local First Nations rights holders as part of the prescription approval process.

3.3.1 Drinking Water Supply Area and Community Watersheds

Water is found in abundance in the Lakes District in numerous wetlands, streams, and lakes. Several of the larger, colder lakes are notable for the purity of their water. Major users of water include industry (e.g., hydro-electric energy, agriculture, and wood processing) and the Village of Burns Lake. The Village water supply is aquifer-based. Water for rural domestic uses, irrigation, stock watering, waterfowl conservation, etc., is typically accessed from surface water sources.

No Community Watersheds have been established within the district at present, although designation may occur over time as lakeshore communities grapple with the effects of increasing human activity and settlement. The primary objective is to maintain water quality as activity levels increase.

In the event of a wildfire, the Village of Burns Lake has access to various lakes and three reservoirs (see section 3.2.3).

3.3.2 Cultural Values

With the Lakes District, there are known archaeological sites including habitation and subsistence sites with features such as earth ovens and cache pits, human remains, pictographs, and sites consisting of cultural materials such as stone tools and/or flakes. Historical sites date from the early fur trade and homestead period. Traditional use sites may include sacred sites, resource gathering sites such as berry picking and hunting grounds, sites of events of cultural significance, and legendary sites. A complex network of trails is indicative of early traditional use sites and trade routes between the aboriginal peoples of the coast and the interior.

According to Lindsay Beedle, Advisor, First Nations Relations, for the Nadina Natural Resource District, *"a review of available information, indicated many areas of significant First Nations values with the Burns Lake Community Wildfire Protection Plan polygon. These values include historical habitation sites, traditional trails, areas of spiritual and cultural importance and resource gathering"*.

The specific area and values details are not public knowledge. Hence, ascertaining the extent and significance of these values will require further assessment by a qualified professional when treatment prescriptions are completed. It is also recommended that local First Nations Bands be consulted at the time of prescription preparation to identify any non-archaeological cultural heritage sites not protected by statute.

3.3.3 High Environmental Values

Each community including Burns Lake must consider high environmental values. High environmental values are identified in the Lakes District Land and Resource Management Plan including species at risk, in relevant FSPs, and management plans.

The Lakes LRMP also discusses species at risk and adopts the general management direction of ensuring that the habitat needs of Red & Blue-listed (rare & threatened) and Yellow-listed (of special management concern) species are provided for. In some instances (i.e., caribou, ungulate winter habitat) specific habitat concerns have been identified at the strategic level (see Sections 4.4 and 4.5). Other more broadly-based habitat concerns will be addressed through biodiversity management at the landscape and stand level. Red-listed (rare) species include a small number of rare plant communities, also to be identified and managed for at the landscape and stand level. Ecosystem and biodiversity management objectives and strategies are found in Section 3.4, Environmental Direction.

Of the vertebrate species found in the area, one, the Anatum peregrine falcon, is provincially red-listed (endangered). Fifteen are blue-listed (threatened) including: Anna's hummingbird, bald eagle, caribou, great blue heron, grizzly bear and Vaux's swift. Fifty-four are yellow-listed (of special management concern) including: blue and spruce grouse, black bear, bufflehead, common merganser, fisher, gray wolf, lynx, marten, mink, moose, mountain goat, mule deer, osprey, pileated woodpecker, river otter, Sandhill crane, and trumpeter swan.

High environmental values such as species at risk that are identified will have to be addressed through the prescription stage.

3.4 Other Resource Values

Within the Burns Lake Area there are a number of significant resource values including, timber supply, tourism, recreation, economic hardship and forest health.

The Lakes Timber Supply Area covers 1.1 million hectares. Within those hectares,

72% is considered Crown productive forest (Indian Reserves, private lands, woodlot license area, community forest agreement areas and non - forested areas are excluded).

35% of the productive forest is not available for timber harvesting – reserved for riparian areas, protected areas, old growth management areas providing ecosystem representation, wildlife tree patches, sites too poor to grow trees quickly, deciduous stands, roads and problem forest types.

The current timber harvesting land base is 524,000 hectares; 46% of the timber supply area or 67 % of the Crown productive forest area.

The Ministry of Forests has produced a detailed summary of short, mid and longer-term timber supply forecasts and opportunities for diversification and mitigation for the Burns Lake area. See attached link for document.

https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/forest-health/mountain-pine-beetle/lakes_tsa_backgrounder.pdf

These factors affecting the Burns Lake TSA also affect the AOI area within the CWPP. Workforce, beetle epidemic, current silviculture practices and investment, economic profile, and resource value implications will all contribute to the timber supply within the area.

Burns Lake is the primary point of access for northern Tweedsmuir Park, the second largest park in British Columbia. The local tourism industry is largely based on part-time/seasonal ventures that capitalize on the area's natural resources. A number of small resorts, campsites and related businesses generate a small but significant amount of employment and income.

Tourism and outdoor recreation concerns focus on providing opportunities for the full range of recreation activities. The spectrum of recreation opportunities include: motorized and non-motorized access, front country and backcountry experiences, consumptive and non-consumptive activities, and public and commercial users.

The land and resource requirements for tourism and outdoor recreation are generally related to the availability and conservation of natural resource values attractive for outdoor recreation. These values include: wildlife, fish, old growth forests, pleasing scenery, feature-based recreational activities, remote and/or wilderness areas, and availability of a range of outdoor recreational opportunities from backcountry (low user density) to full-service camping (high user density) experiences.

The community has a number of lands with significant recreation value. Local residents utilize the recreation areas for skiing, snowmobiling, mountain biking, all-terrain vehicles (ATVs), hunting, fishing, boating, and hiking. The community has worked extensively with the Lakes Outdoor Recreation Society (LORS).

The economic hardship that followed the mill fire threatened the economic sustainability of affected communities in and around Burns Lake. The new community forest aligns with recommendations in the August 2012 "Growing Fibre, Growing Value" report from the Province's Special Committee on Timber Supply to respond to the loss of the mill.

Forest health factors such as insects and diseases are natural components of our forested ecosystems. When present below certain thresholds, native forest health factors are integral to healthy ecosystems, contributing to the food chain and biodiversity. What is considered an acceptable level for a certain forest health factor depends in part on the management goals and objectives for the area. At unacceptable levels damage can lead to economic instability through impacts to timber supply and associated revenues, increased risk and intensity of wildfires, disruption of long-term forest management planning, and negative impacts on recreation and aesthetic values, range, fish and wildlife resources, cultural heritage features, and watershed management.

3.5 Hazardous Values

The Village of Burns Lake has minimal hazardous values including the landfill facility, propane facilities, and a CN rail container terminal.

- The Landfill for Burns Lake is located 68 kilometers west of Burns Lake. The capacity of this location is approximately 60 years.
- There are a number of gas stations with propane facilities in town. Each location adheres to provincial standards for storing and distributing propane.
- Canadian National Railway has a mainline station in Burns Lake and a container terminal.
- The Village does not have a Licensed Hazardous Waste Disposal site.

SECTION 4: Wildfire Threat and Risk - 2015

The intent of this section is to summarize the factors that help determine the wildfire threat around the community. These factors include natural fire regime and ecology, Provincial Strategic Threat Analysis, and a local wildfire risk analysis. Risk assessment for wildfire and its impacts to communities considers both the likelihood of a wildfire and the potential consequence associated with that likelihood. For example, if the fuel (i.e. the hazard) ignites and the fire spreads towards the community (probability), the wildfire can become a threat to life and property (consequence) with an associated risk of loss.

4.1 Fire Regime, Fire Danger Days and Climate Change

The intent of this sub-section is to provide the ecological context of wildfire for the community and to describe the role of fire (frequency and intensity) in the local ecosystem under historical conditions, and the potential implications of future conditions, caused by the interruption of the natural fire cycle and/or climate change.

4.1.1 Fire Regime

Biogeoclimatic zones are another more detailed classification system based on the sub-regional climate, vegetation, and site characteristics. Within the CWPP area The Sub-boreal Spruce Zone (SBS) covers most of the planning area. Lodgepole pine is the dominant species in this part of the SBS zone. Moderately dry climate and a history of frequent wildfires have created a mosaic of relatively young lodgepole pine forests. These would eventually develop into white spruce dominated forests if they remained undisturbed long enough to reach the climax or mature forest stage. Mature spruce forests (over 250 years) are relatively uncommon in the Lakes District planning area because the forests are usually destroyed by fire before they reach the climax stage.

There are two specific sub zones within the BEC system; SBSdk and SBSmc (see Table 6). Virtually all of the CWPP area, 30,739.2 ha., or 94.3% is within the SBSdk - Sub-boreal Spruce Dry Cool Biogeoclimatic Zone (BEC). The SBSdk generally occurs at lower elevations (700-1050 m).

The remaining 1864.7 ha, or 5.7% is within the SBSmc2 - Sub boreal Spruce Babine Moist Cold. The SBSmc2 occurs generally in areas between 900 and 1200 m.

Table 6: Biogeoclimatic Classification by CWPP Area and Area %

Biogeoclimatic Classification by CWPP Area and Area %		
BEC Zones	Area (ha)	CWPP Total Area %
SBSmc2	1864.7	5.7
SBSdk	30,739.2	94.3
Total:	32,603.9	100

Error! Hyperlink reference not valid. is NDT 3 which means that Stand Initiating fire events are frequent (average stand initiating time interval is 125 yrs.). The high historic levels of fire

suppression have resulted in the buildup of surface fuels in the Spruce and Pine types that surround the CWPP area. See figure 2 for Natural disturbance types in British Columbia.

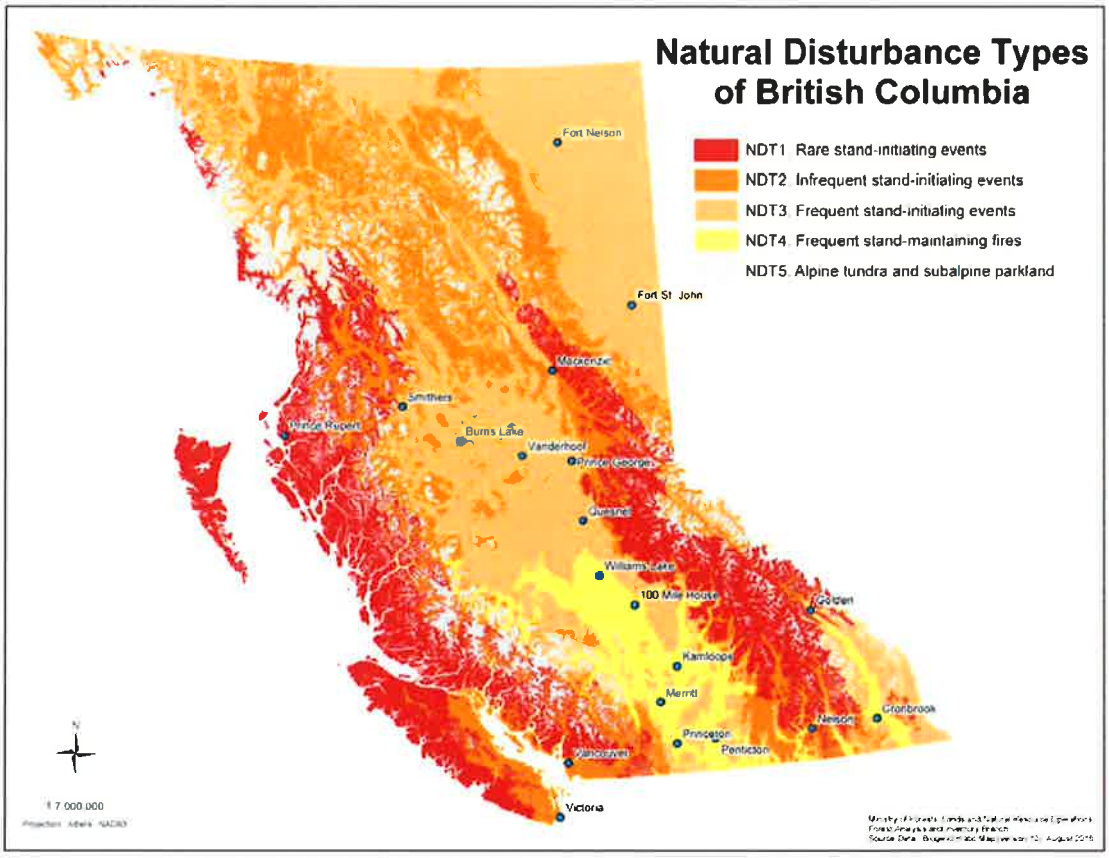


Figure 2 - Natural Disturbance Types of British Columbia

The Mountain Pine Beetle infestation has resulted in historic high levels of dead material that is in the process of blowing down and creating stands with a high to extreme fire hazard. Commercial harvesting of dead pine has removed many of the pine stands in the vicinity of Burns Lake. However quite a few remain and more importantly are the remnants of Pl stands that are no longer economical to harvest. The regen growing up in these heavily attacked stands often tends towards Spruce which makes for a very flammable stand type (spruce regen has a very high laddering capability).

Pine step rusts are currently considered the most serious disease of managed stands in the Lakes TSA. The impact of rusts on stand productivity has previously been estimated at 7.2 % (Woods et al, 2000). IN 2011, a rust sampling project was conducted on 70 randomly selected pine leading age class 1 stands across the Lakes TSA. The results indicated that 99% of the stands had some level of rust present and that 43% of the stands were categorized as high incidence, with >20% of the host trees affected. Western Gall Rust and Comandra Blister Rust were the most prevalent diseases. SDM results are similar with 94% of blocks sampled having rust present and 36% of those stands categorized as high incidence.

Spruce beetle is considered a very high priority forest health factor within the Nadina Forest District. The recent Mountain Pine Beetle epidemic has placed a much greater reliance on Spruce to mitigate timber supply impacts in the midterm. Although there are no large outbreaks currently in the Nadina, there are reports of infestations in neighboring districts and the provincial aerial overview survey has shown an increase in the last two years. (2017, https://www.for.gov.bc.ca/ftp/DND/external/!publish/FSP/2016%20FSP%20Expectation%20Supporting%20Information/2016-2017_DND_Forest%20Health%20Strategy_Final.pdf).

4.1.2 Fire Weather Rating

Table 7 illustrates the Fire Danger rating for Burns Lake area for the period of 2006-2016 shows 354 days at high (Average of 32) and 68 at extreme (average of 6). Within the WUI, and with the exception of structures/subdivisions on the west side of Burns Lake, the majority of structures and values exist on the east side of Decker Lake and Burns Lake. This area is flanked by natural breaks such as the highway, gas line clearing and BC Hydro rights-of-ways.

Table 7: Average No. of Days with Fire Danger Rating (High, Extreme) in Burns Lake over 10 Years

Average No. of Days with Fire Danger Rating (High, Extreme) in Burns Lake over 10 Years		
Year	*High (Days)*	*Extreme (Days)*
2006	42	4
2007	4	0
2008	15	0
2009	45	4
2010	37	12
2011	3	0
2012	54	9
2013	24	3
2014	48	24
2015	34	9
2016	48	3
Total	**354**	**68**
Avg	**32**	**6**

The changing weather patterns and occasional hot and dry spells, combined with higher than average westerly winds could provide conditions that enable larger Rank 4 to 6 fire intensities. These larger, higher rank fires could pose a major threat to the community. Consequences of a higher ranked fire threat could be realized when an ignition occurs during high or extreme wildfire conditions, as represented by Fire Danger Rating. A general indication of the likelihood of high fire threat to the community can be assessed by reviewing the level and frequency of high and extreme fire danger ratings typically experienced in the local area during the fire season.

While the level of High Fire Danger days has remained relatively constant over the past 10 years, the number of Extreme Danger days, while usually quite low - less than 9, had a peak of 24 in 2015 and on average over the past 5 years appears to be increasing. The conditions that provide for Extreme Fire Danger days can contribute to severe, major wildfires occurring. These are the peak conditions that the Landscape Level types of Fuel Management planning and treatment are focused on.

The total amount of precipitation during the period of April – October for the period 2006-2016 is 2231.6 mm, with an average of 202.9 mm. The average precipitation over the last five years is 166 mm (see Table 8). The amount of rainfall and when it occurs has a direct impact on fire starts and is a large factor in predicting the upcoming fire season.

Table 8: Precipitation for April – October for the period 2006 -2016 in Burns Lake over 10 Years

Precipitation for April - October for the Period 2006-2016 in Burns Lake over 10 Years													
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total	Average
Precipitation (mm)	224.4	406.4	198.7	173.6	114.7	283.8	139.0	166.8	99.4	185.0	239.8	2231.6	202.9

4.1.3 Climate Change

Climate change projections point to a warmer and drier environment and shifts in vegetation with the following implications:

- Increased disturbances due to insects and disease - as seen in the Mountain Pine Beetle epidemics.
- Longer and more intense wildfire seasons with increased forest fire frequency and severity.
- Increased number of high and extreme fire danger days for an average year.

The local climate has been changing to a drier climate with the trend towards longer fire seasons, extending several days each year. The impact of this trend on existing forests may be increased probability of fire frequency, intensity and loss of control of wildfires and will likely result in increased tree mortality, detrimental impacts to soils and hydrology. More severe wildfires pose a threat to the local community and Wildland Urban Interface areas. For further information on Climate change, readers are encouraged to review material provided at these sites: Climate Change Adaptation and the Pacific Climate Impacts Consortium.

4.2 Provincial Strategic Threat Analysis (PSTA) - 2015

The intent of this sub-section is to describe fire threat ratings from the Provincial Strategic Threat Analysis (PSTA) Data Package and its key inputs relevant to the community. The data referenced below was obtained from the 2015 PSTA provided to DWB Consulting by BC Wildfire Service in March 2016.

The PSTA is a high-level analysis that assesses the relative wildfire threat of an area. The PSTA includes information and maps that describe fuel types, historical fire density, and the potential for embers to land in an area (spotting impact), head fire intensity, and the final wildfire threat rating. The PSTA data is derived from provincial fuel type mapping, historical fire occurrence data, topography, and historic weather station data, which is interpreted. Note, the PSTA is conducted at the provincial level and has a number of limitations.

The PSTA data is the starting point for assessing wildfire risk and it is equally important to assess local wildfire threat and analyze local factors and data to accurately improve the wildfire threat assessment (see Section 4.3).

Wildfire threat is directly related to the likelihood of hazardous fuel igniting and fire spreading into the community either directly or through ember transport. The PSTA provides information to help evaluate the three conditions necessary for a wildfire to threaten a community:

1. An ignition occurs (Fire History),
2. The resulting fire generates sufficient intensity (Head Fire Intensity) and spreads rapidly, and
3. The fire spreads into and/or transports embers into the community (Spotting Impact).

4.2.1 PSTA Wildfire Threat Rating

To determine the Provincial Strategic Threat Analysis (PSTA) Threat Rating, fire density, head fire intensity (HFI) and spotting impact were combined using a weighted averaging process. Weights were assigned as 30% fire density, 60% HFI (90th percentile) and 10% spotting impact. These weighted values were added together to produce a final fire threat rating and assigned to 10 classes to produce a detailed map of fire threat rating throughout British Columbia.

The 10 Fire Threat Classes represent increasing levels of overall fire threat (i.e. the higher the number, the higher the threat). PSTA Threat Class 7 is considered to be a threshold and the most severe overall threat classes are Class 7 and higher. Areas of the province that fall into these higher classes are most in need of mitigation.

Areas rated as Class 7 or higher are locations where the fire intensity, frequency and spotting can be severe enough to potentially cause catastrophic losses in any given wildfire season, where those ratings overlap with significant values at risk.

Due to the variability in the data sources within BC, areas rated as Class 6 should be reviewed for mitigation potential. These areas are considered to be particularly prone to wildfires (fire density equates to approximately 30 or more escaped fires since 1950), are susceptible to crown fires (head fire intensity greater than 10,000 kW/m), and are most likely to be affected by spotting impacts.

One of the data sets that is used in creating the PSTA is the provincial inventory data. This inventory data is known to be not always accurate. Fuel type data was not ground checked for the CWPP area. To compensate for this, ground and stand types in higher priority areas and areas recommended for treatment were ground verified.

In addition to the Provincial Strategic Threat Analysis data, local conditions were reviewed based on input from the original CWPP assessments, local residents and fire staff knowledge.

The Community Wildfire Protection Plan total area is 32,603.9 ha. Of this area, the PSTA map illustrates (see Table 9) that the fire threat rating is 6 or lower for 22,501.5 ha, or 69.1 %. The remaining threat rating is 7, 8, 9 and 10. The High rating area - 7/8 is 560.3 ha, or 1.7 %. The Extreme rating area - 9/10, is 5464.2 ha, or 1.4 %. Private land covers 9,077.9 ha. or 27.9 % and does not have a threat rating.

PSTA Ratings (see table 9) are as follows: 1-3 are Low; 4-6 are Moderate; 7-8 is High; and 9-10 is Extreme.

Table 9: PSTA Threat Rating Area and Area Percentage for CWPP

PSTA Threat Rating, Area, and Area Percentage for CWPP		
PSTA Threat Rating	**Area (ha)**	**Total Area %**
Low (1-3)	13,166	40.4
Moderate (4-6)	9,335.5	28.7
High (7-8)	560.3	1.7
Extreme (9-10)	464.2	1.4
Private Land	9,077.9	27.9
Total:	32,603.9	100

The Relative Risk coding for the PSTA map is as shown below in table 10.

Table 10: Local Wildfire Risk Weighting

Relative Risk	Weighting
Low	0 – 3.9
Moderate	4 – 6.9
High	7 – 8.9
Extreme	9+

NB: The scoring system is based on a maximum score of 10.

Summary of Fire Risk Classes

Low (Green): The combination of the local fuel hazard, weather influences, topography, proximity to the community, fuel position in relation to fire spread patterns, and known local wildfire threat factors make it a lower potential for threatening a community. These stands will support surface fires, single tree or small groups of conifer trees could torch/ candle in extreme fire weather conditions. Fuel type spot potential is very low, low risk to any values at risk.

Moderate (Yellow): The combination of the local fuel hazard, weather influences, topography, proximity to the community, fuel position in relation to fire spread patterns and known local wildfire threat factors make it possible that a wildfire in this area would threaten the community. Areas of matted grass, slash, conifer plantations, mature conifer stands with very high crown base height, and deciduous stands with 26 to 49% conifers. These stands will support surface fires, single tree or small groups of conifer trees could torch/ candle. Rates of spread would average between 2-5 meters/ minute. Forest stands would have potential to impact values in extreme weather conditions. Fuel type spot potential is unlikely to impact values at a long distance (<400m).

High (Orange): The combination of the local fuel hazard, weather influences, topography, proximity to the community, fuel position in relation to fire spread patterns, and known local wildfire threat factors make it likely that a wildfire in this area would threaten the community. This includes stands with continuous surface/ crown fuel that will support regular torching/ candling, intermittent crown and/or continuous crown fires. Rates of spread would average 6 -10 meters/ minute. Fuel type spot potential is likely to impact values at a long distance (400 - 1,000m).

Extreme (Red): The combination of the local fuel hazard, weather influences, topography, proximity to the community, fuel position in relation to fire spread patterns, and known local wildfire threat factors make it very likely that a wildfire in this area would threaten the community. Stands with continuous surface/ crown fuel and fuel characteristics that tend to support the development of intermittent or continuous crown fires. Rates of spread would average >10 meters/ minute. Fuel type spot potential is probable to impact values at a long distance (400 -1 000m or greater). These forest stands have the greater potential to produce extreme fire behaviour (long range spotting, fire whirls and other fire behaviour phenomena.

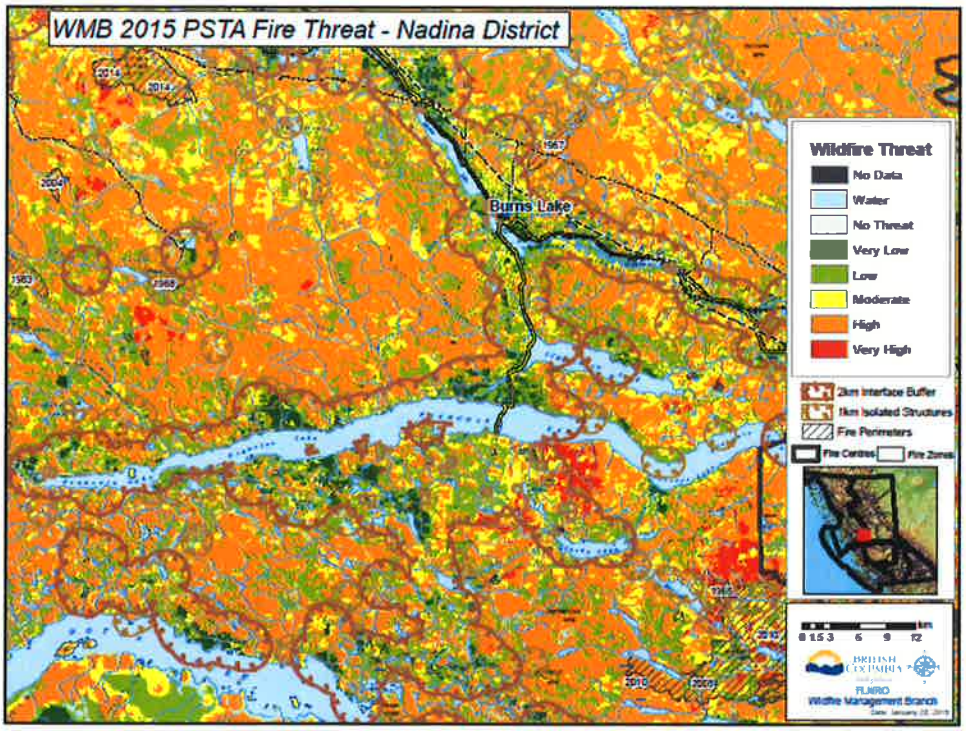
An anomaly in the PSTA data map was noted in the south-east corner of the CWPP area where a large egg shaped polygon was observed and that is rated a 9 based on the PSTA data provided. This area does not appear on the provincial PSTA map. Local BCWS staff were contacted and outlined this is likely a polygon typing error in the program. See attached PSTA Regional Overview Map.

The PSTA map data shows that the majority of the area within the CWPP has a rating of Moderate or lower. Outside of the CWPP there are large areas of High rating, and with the general wind trends out of the west or south east could combine to give a higher probability for catastrophic wildfire events. The large areas covered by the PSTA High rating demonstrate the importance of establishing Landscape Level Fuel management areas. Completing large treatment areas on the west side of Burns Lake and to the north of the community would provide additional locations from which large scale protection efforts could be established if a severe wildfire event were to occur. One of the main objectives of Landscape Level Fuel break treatments would be to give additional control options and to reduce the potential for sparks and embers to be generated, lifted and blown across Primary Fuel Breaks and land inside the CWPP and the Village. While some reduction of sparking would be achieved, the large amount of spruce patches within the Village and surrounding communities means that losses to structures would likely occur. This is a key reason that the Village has been working to encourage homeowners within the CWPP area to actively engage in completing FireSmart activities on their private residences and around structures of value.

Areas of concern are the ridges west of the lakes, the area around Spud Mountain and to the south, and the area around Boer Mountain.

Reducing the potential for wind driven sparks and embers to ignite areas within the CWPP should be seen as one of the highest objectives for fuel management planning in the community. This work involves implementing Landscape Level fuel management treatments, completing work on the treatment areas identified in the original CWPP, removing ladder fuels within areas that were treated over the past few years and implementing FireSmart principles within the community.

Figure 3 - WMB PSTA Fire Threat – Nadina District



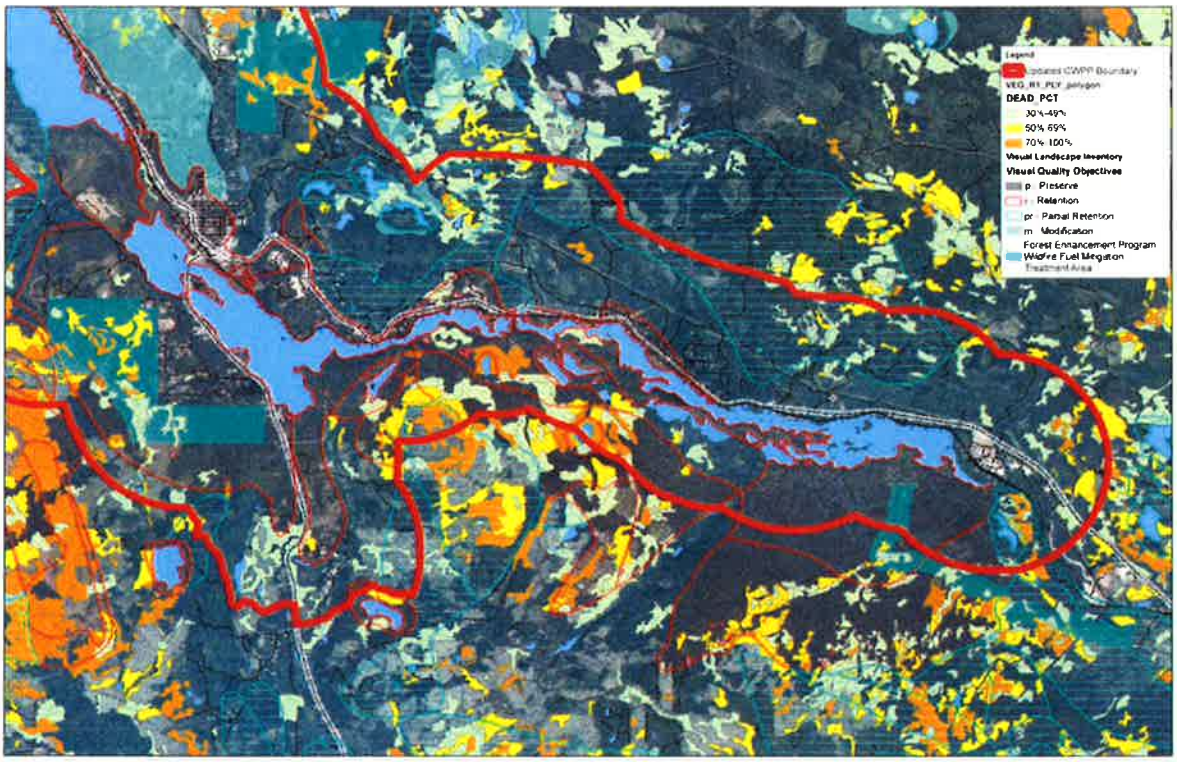
Source: Provincial Strategic Threat Analysis (PSTA) Fire Threat Analysis Component - 2015.

Spud Mountain

Also, see Appendix Two for larger display of map. The area on the steep slopes close to Burns Lake in the vicinity of Spud Mountain that have high mortality rates are shown on the map below. The community should strongly consider reviewing what options are available for removing some of the dead forest from this slope. Clearly there are multiple values at risk here, with the Visuals of the area being amongst the highest. However, if a severe wildfire event were to occur along the Spud Mountain ridge the potential for sparking into the downtown core appears to be high.

Discussions between local officials and Ministry staff are strongly encouraged. These discussions should include the following groups: Ministry of FLNRORD, BC Wildfire Service, Burns Lake Community Forest, Chinook Community Forest, the First Nations, Village of Burns Lake, the Regional District, and community members. See figure 4 for Spud Mortality and Visual quality map.

Figure 4 - Spud Mortality and Visual Quality Map



Strategic Fuel Management Planning

Work has started in other areas around the community to address strategic Landscape Level Fuel Management concerns. Proposals have been made to the Forest Enhancement Society (FES) of BC for funding through the Forest Enhancement Program (FEP) for assistance on fuel treatment costs not covered by traditional harvesting methods to enable local licensees to assist with Fuel Management work. To date these areas include the Babine /Pinnacle FES mitigation project 001 located in the south end of the CWPP - approved by FES for 335 ha; the Boer Mountain FES mitigation project 002 to be submitted and that covers 545 ha; and the Mackenzie Guyishston FES project 003 to be submitted and covering 465 ha and 245 ha in two blocks.

4.2.2 Spotting Impact

Research shows that a high percentage of structure losses are from embers being transported to and igniting structures and subsequent structure-to-structure ignitions[1]. The Spotting Impact Layer estimates the threat of embers impacting a given point on the landscape from the fuel types surrounding it and is classed as Low, Moderate, High and Extreme.

Spotting impact is of particular concern in mature conifer stands with large numbers of regeneration. The regeneration provides laddering opportunities for ground fires ignited by sparks burning in grass and moss to move up into the mature tree crowns and become crown fires. Spotting potential is greatest in stands located downwind of prevailing winds that can blow

[1] Partners in Protection. 2003. Firesmart: Protecting Your Community from Wildfire. Second edition. Partners in Protection. Edmonton, AB.

sparks from Crown fires. The areas on the west side of Burns Lake and south of the Village of Burns Lake are the most susceptible to impacts from Spotting.

Spotting Impact ratings within the CWPP area are generally low. There are several areas along the ridges on the west side of the community that have high to extreme Spotting Impact. These are west of the west end of Osatuik Road and the area south of Spud Mountain on the steep slopes facing Burns Lake. See appendix for Fire History and Spotting Index Map.

There are large areas of moderate Spotting Impact zones on the east portion of the CWPP area. These areas should not present a major threat to the community as the existing Fuel types within the CWPP are not continuous high hazard stand types. Also, many stands contain high percentages of deciduous species and many areas are no longer covered by conifer stands. See appendix for Fuel Type Map.

4.2.3 Fire History

The highest occurrence of fire starts within the CWPP is in the more populated areas as shown on the Fire History map. Fire starts outside of the CWPP are well distributed and are for the most part attributed to lightning.

Of concern to the community should be the more recent large wildfires experienced over the past five or so years. These fires have largely been driven by strong westerly winds and are the ones most likely to cause major damage to the community.

Table 11 illustrates the number and percentage of person and lightning-caused fires for 2015 and the 10 preceding years.

Table 11: Fire History for Period 2005-2015 for the Province of BC

Year	Total Fires	Total Hectares	Total Cost (millions)	Average Hectares per Fire	Person-caused	Person-caused (%)	Lightning-caused	Lightning-caused (%)
*2015***	*1,858*	*280,605*	*$277.0*	*204.9*	*617*	*(33.2%)*	*1,237*	*(66.6%)*
2014	1,481	369,168	$297.9	249.3	664	(44.8%)	817	(55.2%)
2013	1,861	18,298	$122.2	9.8	564	(30.3%)	1,297	(69.7%)
2012	1,649	102,122	$133.6	61.9	708	(42.9%)	941	(57.1%)
2011	653	12,604	$53.5	19.3	444	(68%)	209	(32%)
2010	1,672	337,149	$212.2	201.6	680	(40.7%)	992	(59.3%)
2009	3,064	247,419	$382.1	80.8	881	(28.8%)	2,183	(71.2%)
2008	2,023	13,240	$82.1	6.5	848	(41.9%)	1,175	(58.1%)
2007	1,606	29,440	$98.8	18.3	687	(42.8%)	919	(57.2%)
2006	2,570	139,265	$159.0	54.2	1,034	(40.2%)	1,536	(59.8%)
2005	976	34,588	$47.2	35.4	591	(60.6%)	385	(39.4%)
Average*	**1,756**	**130,329**	**$158.9**	**73.7**	**712.7**	**(39.8%)**	**1,062.8**	**(60.2%)**

* The average does not include the most recent year.

** Figures for the most recent fire season are preliminary estimates (2016, http://www2.gov.bc.ca/gov/content/safety/wildfire-status/wildfire-statistics/wildfire-averages).

According to the BC Wildfire Branch the current 10-year average*, taken from 2005 to 2014, is 1,756 fires, 39.8% caused by people and 60.2% caused by lightning (2016, http://www2.gov.bc.ca/gov/content/safety/wildfire-status/wildfire-statistics/wildfire-averages).

In 2014, BC had the third worst wildfire season in history with the largest fire of the year occurring near the Chelaslie River near Burns Lake, consuming 1,330 square kilometres.

In 2010 the **Binta Lake Wildfire**, south of Burns Lake, grew from 7,000 hectares to about 35,000 hectares in a 12-hour period due to dry conditions and strong winds. At its final size of 40,000 hectares (400 square kilometres) this was the single largest blaze of 2010 in the Province, and resulted in evacuation orders and alerts (2016, http://www2.gov.bc.ca/gov/content/safety/wildfire-status/wildfire-statistics/major-historical-wildfires.

Table 12 depicts the number of wildland fire starts within the radius service area of the Village of Burns Lake for the period of 2007-2016 according to Robert Krause, Director of Protective Services, Village of Burns Lake. The village successfully action all noted fires.

Table 12: Wildland Fire Starts – Village of Burns Lake 2007-2016

Wildland Fire Starts - Village of Burns Lake 2007-2016												
Year	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**Total**	**Average**
Fire Starts	14	3	22	23	4	11	18	6	3	7	111	11

Fire behaviour is the way a fire ignites and burns and what makes it spread and is influenced by the complex characteristics of, and interactions between, fuel, weather and topography. Understanding fire behaviour is vital for the effective management of wildfires within the community of Burns Lake.

Within the community of Burns Lake there were 111 wildland fire starts over a 9-year period and the highest occurrence of fire starts occurred within the CWPP in the more populated areas as shown on the Fire History map (see attached). Fire starts outside of the CWPP area were well distributed with the majority attributed to lightning strikes.

Wind direction and speed impact fire threat. The average wind direction over the previous 10 years is 260 degrees and the average wind speed is 11.5 km/hr (see Table 13). In addition, there may be increased fuel available in the coming years with forest health threat from Spruce Bark Beetle attack. Adjacent districts have outlined there is significant risk of the beetle doing as much, or more damage as the pine beetle epidemic.

Table 13: Average Wind Direction (Degrees) and Speed (km/hr) for April to September by Year for 10 Years

Average Wind Direction (degrees) and Speed (km/hr) for April to September by Year for 10 Years														
	Apr		May		June		July		Aug		Sept.		Average Over 10 Years	
Year	Wind Direction (Degrees)	Wind Speed (km/hr)	Wind Direction (Degrees)	Wind Speed (km/hr)	Wind Direction (Degrees)	Wind Speed (km/hr)	Wind Direction (Degrees)	Wind Speed (km/hr)	Wind Direction (Degrees)	Wind Speed (km/hr)	Wind Direction (Degrees)	Wind Speed (km/hr)	Average Wind Direction (Degrees)	Average Wind Speed (Km/hr)
2006	208	12.3	211	10.4	243	9.4	208	8.0	267	9.0	222	11.2		
2007	167	8.9	201	10.7	241	10.0	202	7.7	226	8.3	230	10.7		
2008	199	11.6	207	11.3	231	9.5	245	10.1	222	10.1	195	8.1		
2009	191	10.7	215	11.8	216	9.9	232	8.4	200	8.0	188	7.5		
2010	195	12.2	163	9.7	220	11.2	265	12.6	219	10.3	146	7.9		
2011	241	8.7	185	9.6	227	9.9	236	9.4	255	9.1	195	10.4		
2012	196	8.5	222	13.0	225	10.1	256	9.2	209	7.7	255	9.4		
2013	191	11.6	212	8.5	187	8.1	245	10.2	223	6.8	205	8.5		
2014	210	11.5	217	10.1	218	10.1	213	8.7	242	7.5	192	8.9		
2015	208	12.5	191	7.5	237	9.2	225	9.2	222	8.8	206	7.5		
2016	199	9.5	228	10.6	230	9.2	231	8.2	233	9.9	221	10		
Avg	200	10.7	205	10.3	225	9.7	233	9.2	229	8.7	205	9.1	259.3	11.5

Emergency evacuation plans could be affected by the fact that Highway 16 is orientated in line with the predominant wind patterns that are common from the northwest.

4.3 Local Wildfire Threat Assessment

The intent of this sub-section is to provide a detailed assessment of the local wildfire threat, including field reviewed fuel characteristics, proximity of fuel to the community, local fire spread patterns, topographical considerations and local factors.

The wildfire risk assessment process provides a means to determine the wildfire risk as it applies to forest fuel hazard, proximity of fuel to the community, fire spread patterns and topography. These factors all influence how a wildfire could impact the community if ignition was to occur. Other considerations include an assessment of high forest fire risk activities, human use, and other environmental factors that affect wildfire threat and risk within different areas of the WUI.

A number of methods were used to obtain local wildfire threat rating: the Provincial Strategic Threat Analysis (PSTA) maps; field knowledge from the staff who completed the first CWPP; field data collected during the first CWPP process, and current data using the Wildfire Threat Worksheet (2012 forms). Wildfire Threat Assessment (WTA) plots were put in on all of the areas proposed for treatment. Wildfire Behaviour Threat class ratings ranged from Moderate to High.

This document provides an update to the original 2007 CWPP. This update identified a few new areas of treatment concern; specifically, Kager Lake Recreation site and trail. Many of the high priority areas proposed in the 2007 documents had key components treated.

Since 2007, larger areas of stand modification both within and outside the 2 km Wildland Urban Interface zone have occurred through harvesting by Woodlot owners, the Community Forest(s), local licensees and clearing by private lot owners.

Over the past few years' fuel management experts have been calling for increasing attention to the removal of laddering fuels and the reduction of stem densities in treatment areas. Observations made in treatment areas conducted within the CWPP indicate that the removal of key laddering fuels (small, live spruce stems under 10 cms in diameter at breast height) needs to be re-visited. The level of removal of stems larger than 12.5 cms at breast height seems to be

acceptable. Treatments conducted on a number of trail systems appear to have been affected by the overlapping objectives of keeping the visual qualities of trails and campsites without making them appear to be treated. Generally, more pruning should have been done to meet fuel management objectives but these treatments can really impact the enjoyment people derive from camping, trail hiking or biking experiences.

A number of proposed treatments from the 2007 plan pointed to treatments on Private Land. While some of these were carried out a number were not. One of the areas deemed a high priority for treatment in this update would be the Search and Rescue office area in the Industrial Park. Since the area proposed for treatment appears to be on private land the Village should undertake discussions with affected parties and work towards getting the treatments done.

The following photos are examples within the CWPP area that illustrate the level of laddering fuels (immature spruce and pine trees that would allow a fire to transition from the ground into mature tree crowns), the amount of coarse Surface Fuel Load material (large pieces of blowdown lying on the ground that contribute to higher amounts of heat when burning) and the level of blow down within several key treatment areas.

Photo 1 - Osatuik Road – Laddering - small conifer stems

Photo 2 - Clearview Laddering - small conifer stems

Photo 3 - Clearview Coarse Surface Fuel Load Material - Blowdown

Photo 4 - Burns Lake Heights Blowdown - Fuel loading and trail user safety issue

4.3.1 Fuel Type Verification

The Canadian Forest Fire Danger Rating System (CFFDRS) fuel typing system does not accurately reflect many of the BC forest and stand type conditions and was not used for any predictive or treatment based recommendations. Current provincial fuel typing is shown as received from the province. Fuel type classifications of the stand polygons considered for treatment were discussed with local knowledgeable staff. Previous treatment units were reviewed to confirm that the treatments were effectively implemented and to determine if there were issues with the Fuel typing. The fuel types that are highest cause for concern are the mature spruce, mixed spruce/pine stands with significant levels of dead pine, corresponding levels of blowdown, with varying amounts of spruce and pine understory stems and the mature pine stands with varying levels of MPB affected stems. Fuel types C2, C3, C4 and C7 loosely correspond to the predominant fuel types found in the CWPP area. C2 - Spruce stands and grey stage MPB affected Pine; C3 - fully stocked mature pine stands greater than 12 m in ht.; C4 - immature pine stands from 4 to 12 m in ht.; C7 - sparse Pine or normal stocked Douglas-fir.

Table 14 illustrates the fire behaviour potential of the Fire Behaviour Prediction system fuel types grouped into 4 categories based on their relevance to a wildfire threat assessment.

Table 14: Fuel Type Categories and Crown Fire Spot Potential

Fuel Type Categories	Fuel Type - Crown Fire/ Spot Potential
1: C2, C4	High
2: C3, C7, M1-M2 >50% Conifer	Moderate
3: C5, C6, O1a/b, S1- S3[1] M1-M2 (26-49% Conifer)	Low
4: D1, D2, M1-M2 (<26% Conifer)	Very Low

The 2017 field validation of fuel type was not undertaken in this update.

4.3.2 Proximity of Fuel to the Community

Fuel closest to the community usually represents the highest hazard. The recommended approach is to treat fuels to achieve a desired level of hazard reduction, from the value or structure outward, ensuring mitigation continuity. Non-contiguous areas between treatment areas and the value or structure may allow a wildfire to build in intensity and increase the rate of spread. This may increase the risk to the value. To capture the importance of fuel proximity in the local wildfire threat assessment, the Wildland Urban Interface area (WUI) is weighted more heavily from the value or structure outwards. Fuels adjacent to the values and/or structures at risk receive the highest rating followed by progressively lower ratings moving out.

The local wildfire threat assessment process subdivides the WUI into 3 areas – the first 100 meters (WUI 100), 101 to 500 meters (the WUI 500), and 501 to 2000 meters (the WUI 2000) (see Table 15). These zones provide guidance for classifying threat levels and subsequent priorities of treatments.

Table 15: Proximity to the Interface

Proximity to the Interface	Descriptor*	Explanation
WUI 100	(0-100 m)	This Zone is always located adjacent to the value at risk. Treatment would modify the wildfire behaviour near or adjacent to the value. Treatment effectiveness would be increased when the value is FireSmart.
WUI 500	(101-500m)	Treatment would affect wildfire behaviour approaching a value, as well as the wildfire's ability to impact the value with short- to medium- range spotting; should also provide suppression opportunities near a value.
WUI 2000	(501-2000 m)	Treatment would be effective in limiting long - range spotting but short-range spotting may fall short of the value and cause a new ignition that could affect a value.
	>2 000 m	This should form part of a landscape assessment and is generally not part of the zoning process. Treatment is relatively ineffective for threat mitigation to a value, unless used to form a part of a larger fuel break / treatment.

* Distances are based on spotting distances of high and moderate fuel type spotting potential and threshold to break crown fire potential (100m). These distances can be varied with appropriate rationale, to address areas with low or extreme fuel hazards.

The proposed Fuel Management treatments will help slow fire spread and reduce intensity and Rate of Spread in key interface locations. The treatment units will also provide areas where initial attack and other suppression efforts can be instigated in a safer and more potentially successful manner. However, Fuel Management treatments on the perimeter of the community and various subdivisions alone cannot minimize fire hazard for all important values.

The zoning of hazard risk within the CWPP is not linear. The presence of remnant Spruce forest throughout the community contributes to pockets of higher hazard. This is one of the main reasons for the importance of implementing the FireSmart program in the community.

4.3.3 Fire Spread Patterns (i.e. ISI Roses)

Wind speed, wind direction, and fine fuel moisture condition influences wildfire trajectory and rate of spread, and is summarized in the ISI Rose(s) from the local representative BC Wildfire Service weather station(s). Wildfire that occurs upwind of a value poses a much more significant threat to that value than a fire that occurs downwind. As can be seen from the diagrams below, the average wind patterns during the fire season are fairly consistent and come from the west to south east.

This is consistent with local knowledge to a large extent but anecdotal info indicates a trend seems to be occurring where the winds blow strong out of the west during periods of hot, dry weather and from the south east when cold fronts move through at higher velocities than in previous years. The majority of the time the Initial Spread Index indicates fires would have a low spread index.

The predominant summer fire spread patterns for the Burns Lake area (Burns Lake Airport weather station data) during the peak burning periods are shown in the following diagrams using ISI Roses provided by BC Wildfire Service. These were generated using the hourly ISI data and grouped into four daily time periods and displayed in a monthly graphical format (see figure 5 and 6).

Figure 5: Initial Spread Index (ISI) Roses 1996-2015

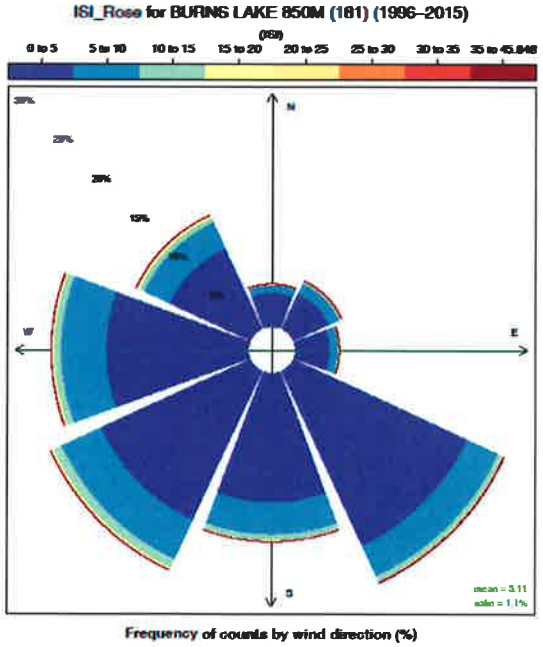
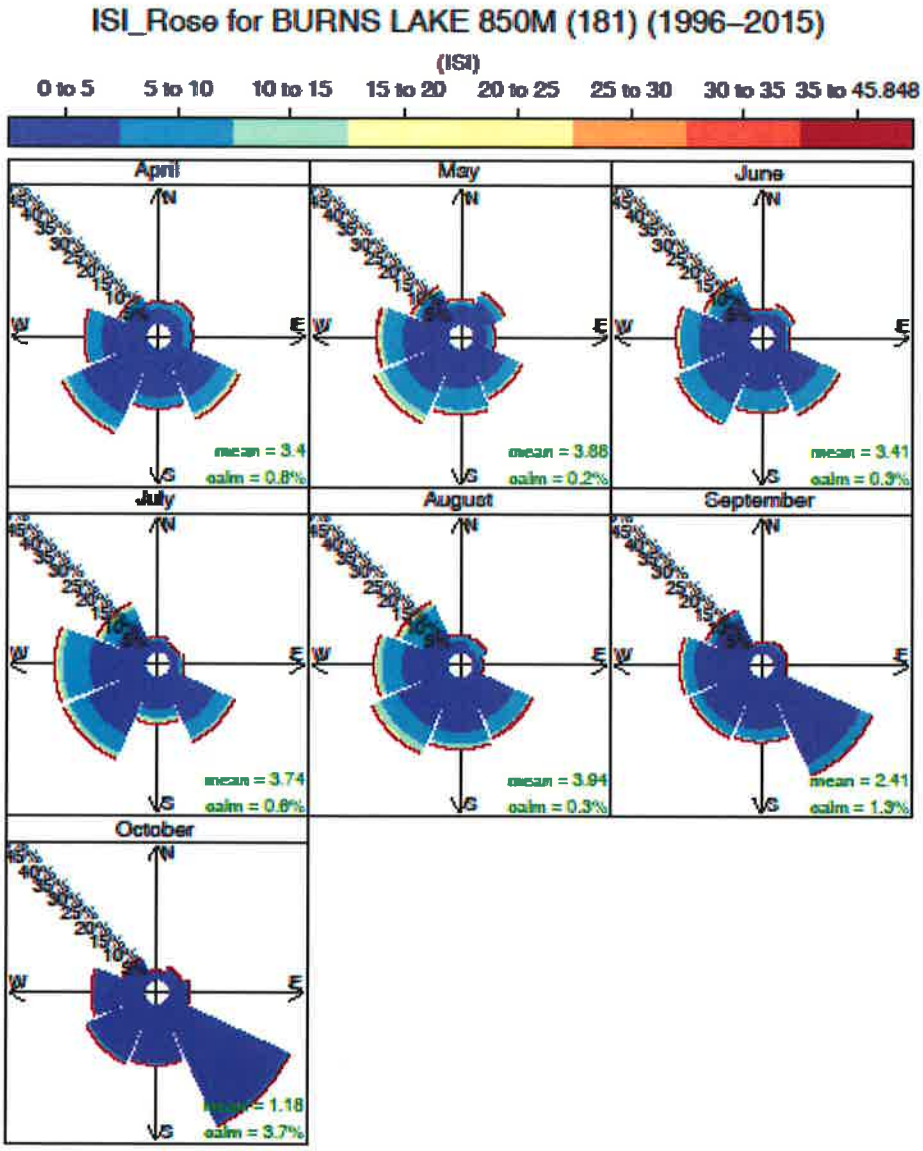


Figure 6: ISI Rose for Burns Lake 850 (181) (1996-2015) - Wind Direction



4.3.4 Topography

The Village of Burns Lake is located in a valley bottom that runs north north-west to south south-east.. On the west side of the community and across the lake are several ridges located between 1.5 and 7 kilometers from the village.

These ridges located on the west side of the valley are heavily timbered and provide a large amount of fuel. The heavy fuel loading and large component of dead pine in these stands could result in extreme fire behaviour making suppression efforts difficult.

Burns Lake forms a non-fuel buffer along the whole length of the Burns Lake corridor and provides some protection from fire spread from the west.

4.3.5 Local Wildfire Risk Classification

A number of methods were used to obtain local wildfire threat rating: the Provincial Strategic Threat Analysis (PSTA) maps; field knowledge from the staff who completed the first CWPP; field data collected during the first CWPP process, and current data using the Wildfire Threat Worksheet (2012 forms). Wildfire Threat Assessment (WTA) plots were put in on all of the areas proposed for treatment. Wildfire Behaviour Threat class ratings ranged from Moderate to High.

The Canadian Forest Fire Danger Rating System (CFFDRS) fuel typing system does not accurately reflect many of the BC forest and stand type conditions and was not used for any predictive or treatment based recommendations. Current provincial fuel typing is shown as received from the province. Fuel type classifications of the stand polygons considered for treatment were discussed with local knowledgeable staff. Previous treatment units were reviewed to confirm that the treatments were effectively implemented and to determine if there were issues with the Fuel typing. The fuel types that are highest cause for concern are the mature spruce, mixed spruce/pine stands with significant levels of dead pine, corresponding levels of blowdown, with varying amounts of spruce and pine understory stems and the mature pine stands with varying levels of MPB affected stems. Fuel types C2, C3, C4 and C7 loosely correspond to the predominant fuel types found in the CWPP area. C2 - Spruce stands and grey stage MPB affected Pine; C3 - fully stocked mature pine stands greater than 12 m in ht; C4 - immature pine stands from 4 to 12 m in ht.; C7 - sparse Pine or normal stocked Douglas-fir.

SECTION 5: Risk Management and Mitigation Factors - 2015

The intent of this section is to outline the strategies the community can put into practice to reduce the risk and the impact of a wildfire. Risk mitigation choices can vary by community, fuel type, ecology, hazard, terrain factors, land ownership, other unique local risk factors, Local Government and First Nation capacity, and/or public acceptance.

Mitigating wildfire risk is a proactive approach to reducing potential impacts and subsequent losses from devastating wildfires, and is best conducted in a coordinated fashion amongst applicable land managers/owners that includes provincial and federal governments, local governments, First Nations, and private landowners. Understanding and assessing all of the risks that apply to a given community is a key consideration when determining actions that local governments can undertake to mitigate and manage the wildfire risk within and adjacent to their respective jurisdictions.

There are many different risk mitigation options available. Three have been identified for this section:

1. Fuel Management – reduce fire behaviour potential
2. FireSmart – reduce fire spread into community and impacts to values
3. Communication and Education – reduce fire occurrence.

Approximately 49 hectares have been identified for Fuel Management action in the CWPP area. Of these areas, 39.2 ha are considered to be High priority. The areas and Treatment Rationales

are presented in Table 16. Due to the nature of fuel types and locations in the community a strong recommendation for FireSmart is included. It is noted that the Village of Burns Lake has implemented a FireSmart Board and is taking steps to educate and advance the FireSmart cause throughout the community.

5.1 Fuel Management

The intent of this section is to conduct more detailed work on the highest local risk areas of the WUI identified in Section 4.3.7 and design logical treatment units for future prescription development and operational fuel treatments within the highest risk areas.

Areas identified through the CWPP Assessment process are shown in the fuel management field work tables (See appendix).

The overall objective for Fuel management in the CWPP is a combination of Strategic focus through the Forest Enhancement Society of BC Program areas that would implement Primary Fuel Breaks along with specific targeted treatments within the community that consist of Interface Fuel breaks.

Over 1500 ha of area are recommended for the strategic level Primary Fuel breaks and 54 ha are proposed for Interface Fuel breaks. A number of areas have been recommended for focused FireSmart activities.

Fuel Management actions are proposed that would involve funding through SWPI/UBCM, ground work by local BCWS Initial attack crews, Licensee harvesting plans on Crown land and in the Community Forest and through FireSmart actions taken on by private land owners. Proposed Treatment units slated for implementation will require review by FLNRORD and BCWS staff prior to the submission of applications for prescription and treatment funding as well as going through a FLNRORD referral process to First Nations and tenure Stakeholders.

The proposed re-treatment and treatments are focused on implementing the following actions:

1. Remove standing dead trees and blowdown.
2. Reduce ladder fuels by removing sub-merchantable stems - particularly those less than 10.0 cm diameter at breast height (dbh).
3. Selectively remove stems in the 10.1 to 12.5 cm dbh range to reduce laddering into mature crowns and open up crowns through the removal of sub-dominant stems.
4. Prune all retained conifers to 3.5 m in ht. or half the ht. of the tree.
5. Ensure the removal of all laddering potential stems along the edges of treatment units to prevent fires burning in ditches and roadside edges from moving up into forest crowns.

The proposed treatment units are located adjacent to priority WUI subdivisions or areas where there is potential for higher risk fire starts to occur.

The treatments are expected to achieve the following fuel management objectives:

1. Reduce fire severity in forested stands adjacent to private property and high value structures;
2. Reduce the chance of a running crown fire by opening up Crown canopies to let heat escape;
3. Reduce the chance of a fire moving from the ground up into the crowns by removing most of the small diameter trees (ladder fuels);
4. Reduce the likelihood of fires moving up the crowns of retained trees by pruning the bottom branches; and
5. Reduce the heat generated by fire in the stand by cleaning up burnable material on the ground.

Fuel Management Plan Overview

The Village of Burns Lake CWPP Wildfire Behaviour Threat Score Priority Ranking Summary illustrates the priority treatment areas for the CWPP.

The appendix contains an excel workbook in which the first tab summarizes the treatment areas, the second tab is put in a summary table as per CWPP format, and the last tab is the fuel treatment costs.

Objectives:	Reduce crown fire initiation, fire intensity and crown fire spread. Improve firefighter safety and access in the event of wildfire suppression activities; improve the effectiveness of aerial fire control tools and provide a safe location to initiate suppression actions.
Strategies:	Modify stand structure to reduce fuels available in the event of a wildfire: Fell & treat dead stems; prune laddering component; Thin spruce regen thickets that constitute a laddering hazard; Promote aspen component; Reduce fuel surface material by mechanical piling/mulching and/or burning/removal; hand piling and burning.
Methods:	Mechanical and manual falling & cutting of merchantable stems to reduce Crown canopy density; Reduce ladder fuels - by thinning and reduction of stem numbers of small diameter stems (Spruce thickets). Pruning of retained conifers; reduce Surface Fuel Loading through mulching and/or mechanical or manual piling & burning of debris; removal of firewood by local residents with pick-ups & quads. Remove > 95% of dead trees. Remove > 95% of live stems within 10 m of any private boundary or road edge. Prune retained live conifers to approx. 3.5 m in ht. Remove approx. 80 % of spruce and pine pole, sapling and regen stems to reduce laddering potential. Reduce fine surface fuels to less than 15 tonnes/ha and Total Surface Fuel Loading to less than 30 Tonnes/ha.

The Village of Burns Lake CWPP Proposed Treatment Summary Table outlines the complete summary of all areas considered for treatment and their status.

5.2 FireSmart Planning & Activities - 2017

The Village of Burns Lake has been proactive in utilizing FireSmart within the community. The village has applied for and received a FireSmart grant in 2016 to further mitigate fire risk within private property.

5.2.1 FireSmart Goals & Objectives

The intent of this sub-section is to identify the general goals and objectives of FireSmart. The Village has also identified the need to educate and encourage private land and Village residents to assist in mitigation efforts on private land. In addition, the community has identified FireSmart activities within the Operational Community Plan to support and help implement fire mitigation expectations within the community.

Refer to: The FireSmart manual (FireSmart Protecting Your Community from Wildfire) provides detailed guidance.

5.2.2 Key Aspects of FireSmart for Local Governments

This sub-section provides a summary of FireSmart activities that have been and/or will be implemented. There are many different ways that members of the community and stakeholders can provide options to mitigate the risk (FireSmart, 2003).

Table 16 summaries the FireSmart Practices and Activities.

Table 16: FireSmart Practices and Activities

Topic	FireSmart Examples
Communication, Education & Partnerships	• *Host a FireSmart day* • *Use local government and First Nation newsletters and social media* • *Undertake FireSmart Local Representative or Community Champion training* • *Apply for FireSmart Community Recognition* • *Form a FireSmart committee* • *Encourage homeowners and/or neighborhoods to undertake FireSmart site assessments and area assessments*
Vegetation management	• *Develop policies and practices for FireSmart maintenance of public spaces, such as parks and open spaces* • *Use landscaping requirements in zoning and development permits to require fire resistive landscaping* • *Provide access to a chipper or dumpster for debris drop-off from pruning or thinning on private properties*
Planning & Development	• *Develop policies and practices for FireSmart construction and maintenance of public buildings* • *Establish Development Permit Areas for Wildfire Hazard in order to require FireSmart exterior finishing* • *Consider wildfire prevention and suppression in the design of subdivisions (e.g. road widths, turning radius for emergency vehicles, and access and egress points)* • *Coordinate the reviews of new developments across multiple departments, including the fire department* • *Consider mutual-aid fire control agreements*
Increasing local capacity	• *Develop and maintain Structural Protection Units (SPU) and/or learn how Emergency Management BC deploys SPUs for interface fires* • *Provide sprinkler kits (at cost) to residents* • *Cross-train fire departments to include structural fire and wildfire training*

5.2.3 Identify Priority Areas within the Area of Interest for FireSmart

The relative wildfire risk in the WUI (Section 4.0 above) has identified the priority areas and the authors have consulted with the FireSmart representative to ensure key areas are identified for FireSmart planning and activities. Relative levels of wildfire risk adjacent to established neighborhoods and structures were considered.

The local FireSmart committee has identified the following treatment areas. The wildfire risk rating for FireSmart implementation was determined by the local FireSmart committee. Table 17 illustrates the recommended treatments for FireSmart activities.

Table 17: Summary of FireSmart Recommended Treatments

Area ID	Wildfire Risk Rating (E/H/M/L)	FireSmart Y/N	FireSmart Canada Recognition Received Y/N*	Recommended FireSmart Activities
Burns Lake Heights	M-H	N	N	This area is an unsanctioned recreation area for hiking, snowshoeing and some winter motorized sports. Treatment: Fuel management treatment or log as blowdown. The estimated area is approximately 60 Ha and is deemed Village property.
Omineca Ski Area	E	N	N	Multiple buildings and is heavily used for winter sports. Treatment: Fuel management closer to the recreation area and access roads.
Rod Reid Trail Fen and Recreation Site	E	N	N	Established walking trail around fen, some non-motorized recreation and heavily used by birds and other wildlife. Treatment: Fuel management treatment with FireSmart education to the private land owners adjacent to Park area.
155 Romieu Drive (Industrial Area)	H	N	N	Contains Village assets with adjacent private land. private land is heavily forested with small slash piles and dilapidated buildings. Treatment: Cut fuel free strip between Village land and private land, and educate land owner about FireSmart practices.
Saul creek (The Gully)	M	N	N	Walking trail located between 6th and 8th Ave., sensitive soil erosion area with 100 % slopes - no machine use area. Has been hand treated previously and will require continuous fuel management. Treatment: Yearly monitoring and FireSmart education to private land owners with property adjacent of slopes.
4th Avenue Park	L-M	N	N	Small park area with buildings all around. Treatment: Identified as priority and scheduled for fuel management treatment in spring, 2017.

*Note, the Village is applying for FireSmart recognition as a whole.

5.3 Community Communication and Education

This section describes key steps the community has taken to build engagement and support for implementation of Fuel Management actions with in the CWPP.

The CWPP document was sent out by email for review and comments to the operations group that attended the first meeting in August 2015. The CWPP document was reviewed in detail with the Mayor and Council via teleconference in May 2018.

Once the CWPP receives approval it will be posted on the Village Web site and the RDBN web site.

The FireSmart program has been promoted extensively within the community and is receiving a lot of good coverage. This includes education on fire prevention practices, outreach and community programs.

The following illustrate the various FireSmart booths that occurred in 2016.

Fire Smart Information booth events

Oct. 6, 2016:	Village Open house for OCP draft
Oct. 17, 2016:	Fire Dept. Open house event
Nov. 5, 2016:	MPMC sale event
Nov. 25, 2016:	At Lakeview mall – no specific event
Dec. 2, 2016:	Chinook ComFor open house in Southside and Burns Lake.

Other FireSmart Activates:

Oct. 10 and 23, 2016: Burns Lake town FireSmart hazard assessment – Completed by Jesse Bird, FireSmart representative for the Village of Burns Lake
Nov 1, 2016: First Firesmart committee meetings (planned for 1 to 2 a month). Members consist of: 2 Wildfire protection, Fire Chief, 1 Burns Lake ComFor rep., 1 Chinook ComFor rep. 1 general public rep., 1 BC Hydro rep., 1 Village council rep., and 2 Village staff reps.
Nov 4, 2016: Start up Burns Lake Fire Smart Facebook group
Jan 4, 2017: Begin 8-week newspaper and classifieds FireSmart information publication
Jan 21, 2017: First single FireSmart home assessment
Jan 31, 2017: BC Hydro "green card" training (power line / pole safety course to do limited brush work under and around power lines / poles). 3 committee members took part in course (Jesse Bird, Cliff Manning and Kristy Bjarnason)
Feb. 2, 2017: Send in FireSmart Community Protection Achievement Certificate Nomination form.

Additional FireSmart activities will be conducted as per the FireSmart committee recommendations.

5.4 Other Prevention Measures

The FireSmart committee has been working with BC Hydro to mitigate fire risk along power lines/pole where trees and brush are growing. BC Hydro will commence a large vegetation removal of trees and brush around power line/poles in April, 2017. In addition, BC Hydro is

supporting Fire Smart initiative by providing a "green card" training course for non-BC Hydro workers to perform vegetation work under/around hydro lines/poles.

The Village of Burns Lake is taking initiatives to imbed FireSmart within the community. The Village has included FireSmart in the Official Community Plan and the Village is committed to achieving FireSmart certification through FireSmart Canada.

5.5 Summary of Recommendations

In addition to what was outlined in section 5.2.3, the following summarizes key recommendations that have been included in this section. Table 18 outlines the summary of recommendations.

Table 18: Summary of Recommendations

#	*Recommendation*	*Responsibility/Funding Source*	*Next Steps*
1	Implement Fuel management re-treatment on 31.9 ha.	VBL - IA Crew may be able to assist with most of the units.	Contact BCWS at Burns Lake; conduct public notification; Apply for SWPI funding if IA Crews not available; Prepare Prescriptions, refresh bdy layout as needed.
2	Implement Fuel Management Treatment on 16.0 ha.	VBL - IA Crew may be able to assist with most of the units. For units the IA Crew can't address, apply to SWPI for Prescription funding and then Operational Treatment Funding / VBL.	Contact BCWS at Burns Lake; conduct public notification; Apply for SWPI funding if IA Crews not available; Prepare Prescriptions, Do bdy layout.
3	Support Community Forest & Licensees with proposals to FEPBC.	Proponents (Community Forest & Licensees)/ FEPBC	Discuss how VBL can assist proponents with applications & proposals to FEPBC.
4	Undertake Fire modelling for the Spud Mountain ridge - high visibility area & overlap with VQOs.	VBL to work with FLNRO & BCWS/ FEPBC or Ministry Landscape Level Planning.	Schedule meeting(s) with FLNRO/BCWS to discuss process and proposal preparation.

In addition to the above, the community needs to continue more educational events and information sessions with funding from local government. It is also recommended that funding be allocated for FireSmart.

SECTION 6: Wildfire Response Resources - 2017

This section provides a high-level overview of the resources that are available to local governments in the case of a wildfire.

6.1 Local Government and First Nation Firefighting Resources

The British Columbia Provincial Coordination Plan for Wildland Urban Interface (WUI) Fires describes the provincial response to a major WUI fire event.

Burns Lake Fire and Rescue services provide fire protection with the Village of Burns Lake and within an 8 kilometer radius service area within the Regional District of Bulkley Nechako (RDBN) (Electoral Area B). This agreement provides for structural protection, as well as wildland fire suppression on all lands within the Village and RDBN service area.

Through an Order in Council, the department may also assist the Wildfire Service on wildfires outside the 8 km radius service area at the request of BCWS. The department many provide resources and manpower if available. The department has typically actioned these type of events two to three times a-year (2017, Krause, Personal Communication). In these circumstances, the department contracts directly to BCWS.

Additional mutual aid agreements are in place with the District of Houston, and the Village of Fraser Lake.

The following provide details about the Burns Lake Fire Rescue department and equipment, water availability and wildfire suppression, access and evacuation, training, structure protection, and summary of recommendations.

6.1.1 Fire Departments and Equipment

Burns Lake Fire Rescue is a Volunteer Fire Department. The department consists of up to 28 members lead by a full time Fire Chief. The department operates three apparatus out of a single fire hall in Burns Lake, including 1 Engine, 1 Tender and 1 Rescue truck. The department trains all members in S100 and S115, including annual refresher training and works very closely with the local office of the BCWS. BLFR does have authority from Council to work with BCWS on wildfires which are outside the fire protection area, subject to availability of staff and equipment.

6.1.2 Water Availability for Wildfire Suppression

The majority of the Village of Burns Lake is served by a hydrant system which includes diesel powered backup pumps in the event of a power outage. The industrial park and the Regional District portion of the fire protection area are not served by hydrants, however the department does have 1 tender and 1 relay tank as part of its water supply plan, and also has access to 2 additional tenders through the Municipal Works department. Underground storage tanks are located approximately 5 kilometers east (20,000 litres) of town and approximately 6 kilometers west (in excess of 100,000 litres) of town. The tank east of town was put in for the Fire Department's use. The one west of town also serves as a water supply for sprinkler protection for Decker Lake Elementary school. The Village has the rights to use it for any other structure fire in the area. The tank in the East was used in December, 2016 for a structure fire where two re-loads were taken out of it. These tanks are located near the border of the fire protection area. However there is no backup power system to refill these tanks and once they have been drained

they would not be available in the event of a prolonged power outage. There is no storage tank or dry hydrant to the south of town and this is one of the areas that should be researched for future development.

The Fire department has other means to refill tanks if there was a prolonged power outage. The department has access to the lake and could set up a volume pump into the lake if it was a prolonged activity.

The biggest risk is a wildfire occurring due to prevailing winds on the south side of town. Tchesinkut Lake is too far away for re-load and there are adverse grades both ways.

The recommendation is to put a dry hydrant 5-6 kilometers south on highway 35, into Burns Lake. This will ensure adequate resources are available surrounding the fire protection area.

6.1.3 Access and Evacuation

The access for fire equipment within the Village is adequate, although a number of adverse grades exist. The adverse grades impact turnaround response time and water delivery. There are limited opportunities to access the Saul Creek gully that runs through the middle of the community. All activity must be done by hand crews in this area. It is a much slower process to action the fire and slows down production. Manpower only in this area does provide some challenges for crews due to the steepness of the area.

Outside the municipal boundary but within the Regional District fire protection area are numerous dead-end roads that lack sufficient turn-arounds for Fire Apparatus. These roads are also the only evacuation routes for residents that live in these areas. The apparatus positioning is key for the fire department to get out. Under the new design pattern sub-divisions must have a minimum turn around radius for fire equipment.

6.1.4. Training

Currently all members are trained in S100, S115 and ICS 100. The department has a number of members with significant wildfire training and experience.

6.2 Structure Protection

The community does not have any structural protection equipment at this time. The local office of BCWS (British Columbia Wildfire Service) does maintain a stock of +/-40 sprinklers that would be available for use in the local area.

6.3 Summary of Recommendations

The following summarizes all of the recommendations discussed in this section.

Recommendation	*Responsibility/Funding Source*	*Next Steps*
Establish a dry hydrant 5-6 kilometers south on highway 35, into Burns Lake.	Regional District/Village of Burns Lake/Potential grant funding	Obtain quotes for dry hydrant installation. Reviewing funding opportunities Apply for funding Installation

Appendix One:

Field Data Folder

CWPP PDF Photos

CWPP Field Plot Pictures -Word

CWPP Field Plot Picture -PDF

CWPP Plots_20000KMZ

CWPP Scanned Field Plots

Table Folder

VBL _2016 Plot Assessment Values Workbook

VBL _Fuel Trmnt Summary Workbook

Village of Burns Lake CWPP Proposed Treatment Summary Table

Village of Burns Lake CWPP Wildfire Behaviour Threat Score Priority Ranking Summary Table

Village of Burns Lake CWPP Wildland Urban Interface Wildfire Threat Field Assessment Priority Summary Table

Appendix Two:

Maps Folder

Burns Lake CWPP Threat_Plots

Burns Lake- NDT.8x11

Burns Lake SPUD Mortality and Visual Quality

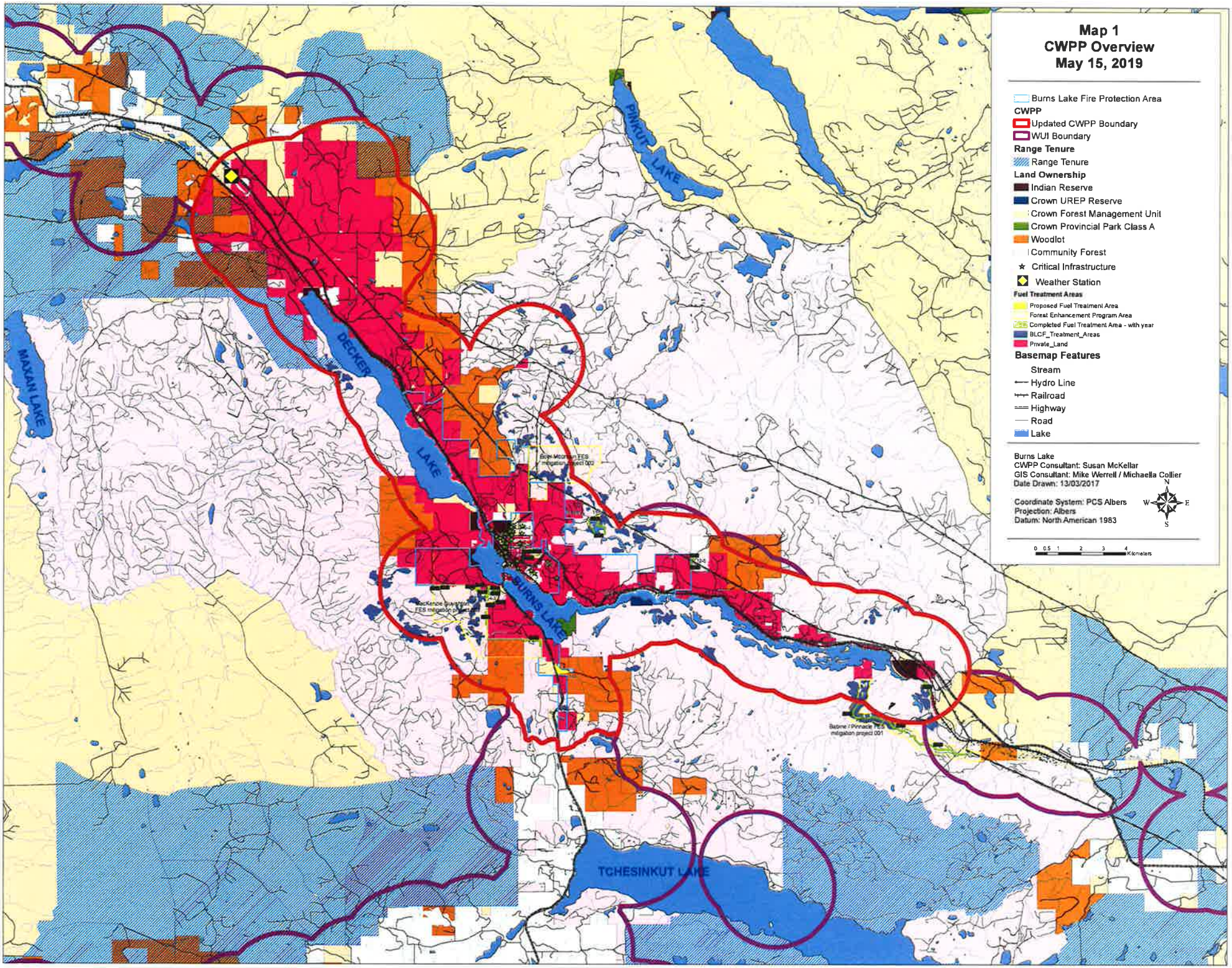
BurnsLake_BEC

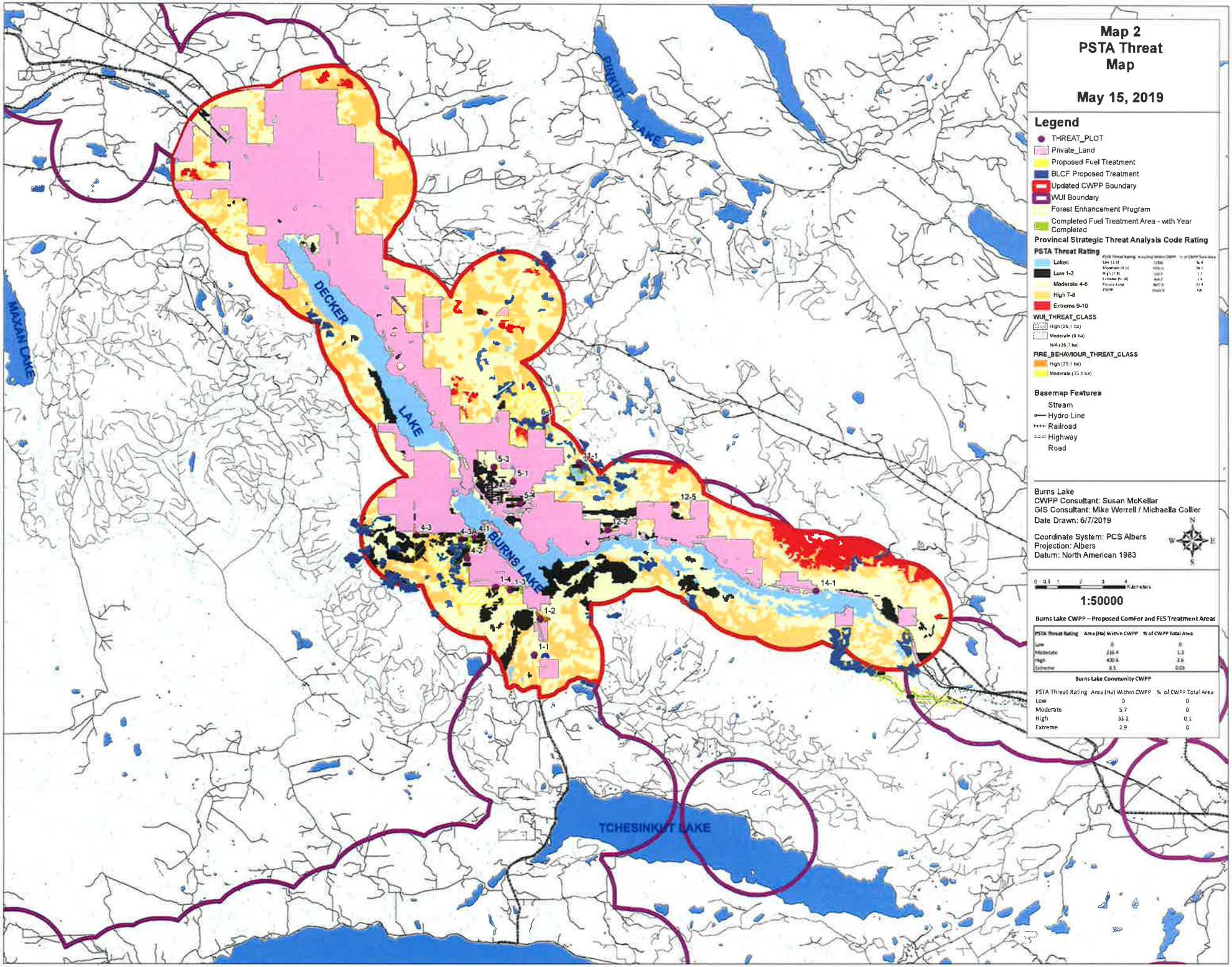
Map 1_Burns Lake_CWPP_Overview_Appd_May 15_2019

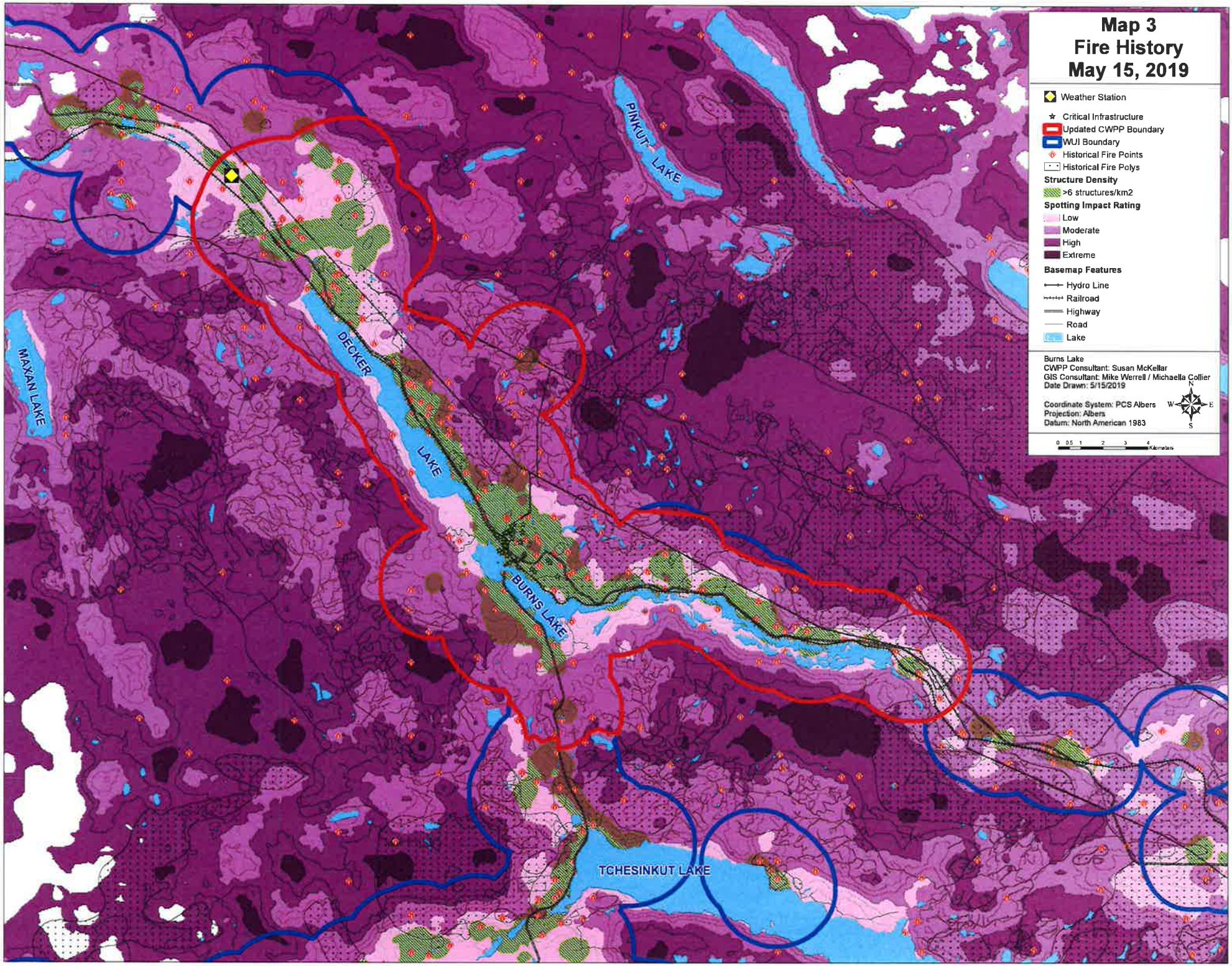
Map 2_Burns Lake_CWPP_PSTA-Wildfire Threat_BLCF Treatment_Appd_May 15_2019

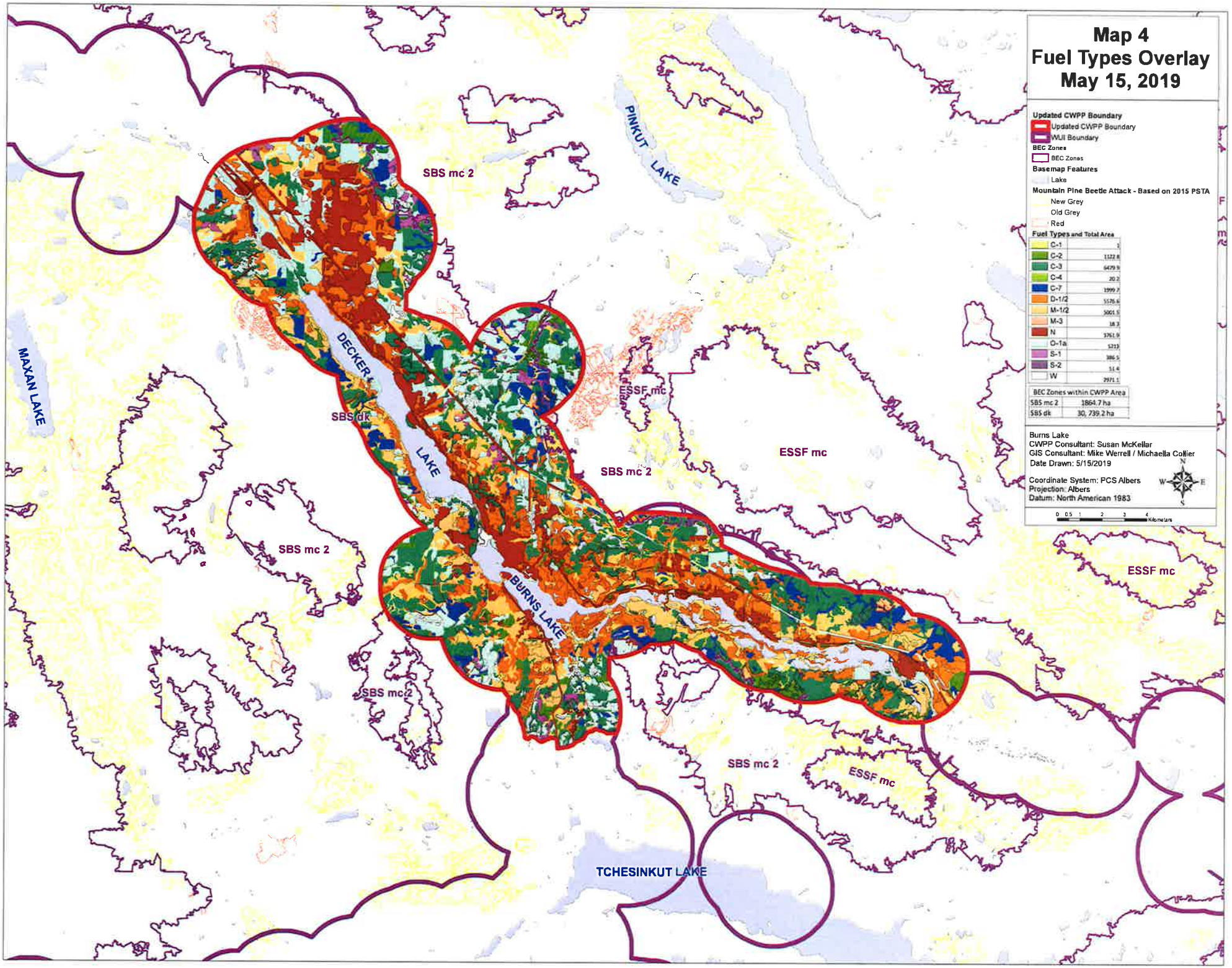
Map 3_Burns Lake_CWPP_Fire History_Appd_May 15_2019.

Map 4_Burns Lake_CWPP_Fuel types_Appd_May 15_2019


Map 1
CWPP Overview
May 15, 2019
Burns Lake Fire Protection Area
CWPP
Updated CWPP Boundary
WUI Boundary
Range Tenure
Range Tenure
Land Ownership
Indian Reserve
Crown UREP Reserve
Crown Forest Management Unit
Crown Provincial Park Class A
Woodlot
Community Forest
Critical Infrastructure
Weather Station
Fuel Treatment Areas
Proposed Fuel Treatment Area
Forest Enhancement Program Area
Completed Fuel Treatment Area - with year
BLCF_Treatment_Areas
Private_Land
Basemap Features
Stream
Hydro Line
Railroad
Highway
Road
Lake
Burns Lake
CWPP Consultant: Susan McKellar
GIS Consultant: Mike Werrell / Michaella Collier
Date Drawn: 13/03/2017
Coordinate System: PCS Albers
Projection: Albers
Datum: North American 1983
N
W
E
S
0 0.5 1 2 3 4 Kilometers
PINKUT LAKE
DECKER LAKE
MAXAN LAKE
BURNS LAKE
TCHESINKUT LAKE


Map 2
PSTA Threat
Map
May 15, 2019
Legend
THREAT_PLOT
Private_Land
Proposed Fuel Treatment
BLCF Proposed Treatment
Updated CWPP Boundary
WUI Boundary
Forest Enhancement Program
Completed Fuel Treatment Area - with Year Completed
Provincal Strategic Threat Analysis Code Rating
PSTA Threat Rating
Lakes
Low 1-3
Moderate 4-6
High 7-8
Extreme 9-10
WUI_THREAT_CLASS
High (26.1 ha)
Moderate (8 ha)
N/A (35.1 ha)
FIRE_BEHAVIOUR_THREAT_CLASS
High (35.1 ha)
Moderate (35.1 ha)
Basemap Features
Stream
Hydro Line
Railroad
Highway
Road
Burns Lake
CWPP Consultant: Susan McKellar
GIS Consultant: Mike Werrell / Michaella Collier
Date Drawn: 6/7/2019
Coordinate System: PCS Albers
Projection: Albers
Datum: North American 1983
N
W
E
S
0 0.5 1 2 3 4 Kilometers
1:50000
Burns Lake CWPP – Proposed ComFor and FES Treatment Areas
PSTA Threat Rating
Area (Ha) Within CWPP
% of CWPP Total Area
Low 0 0
Moderate 216.4 1.3
High 430.6 2.6
Extreme 8.5 0.05
Burns Lake Community CWPP
PSTA Threat Rating Area (Ha) Within CWPP % of CWPP Total Area
Low 0 0
Moderate 5.7 0
High 33.2 0.1
Extreme 2.9 0
DECKER LAKE
BURNS LAKE
TCHESINKUT LAKE
MAXAN LAKE
1-1
1-2
1-3
1-4
4-1
4-2
4-3
4-3A
5-1
5-3
5-4
6-1
12-5
14-1


Map 3
Fire History
May 15, 2019
Weather Station
Critical Infrastructure
Updated CWPP Boundary
WUI Boundary
Historical Fire Points
Historical Fire Polys
Structure Density
>6 structures/km2
Spotting Impact Rating
Low
Moderate
High
Extreme
Basemap Features
Hydro Line
Railroad
Highway
Road
Lake
Burns Lake
CWPP Consultant: Susan McKellar
GIS Consultant: Mike Werrell / Michaella Collier
Date Drawn: 5/15/2019
Coordinate System: PCS Albers
Projection: Albers
Datum: North American 1983
N
W
E
S
0 0.5 1 2 3 4
Kilometers
PINKUT LAKE
DECKER LAKE
MAXAN LAKE
BURNS LAKE
TCHESINKUT LAKE


Map 4
Fuel Types Overlay
May 15, 2019
Updated CWPP Boundary
Updated CWPP Boundary
WUI Boundary
BEC Zones
BEC Zones
Basemap Features
Lake
Mountain Pine Beetle Attack - Based on 2015 PSTA
New Grey
Old Grey
Red
Fuel Types and Total Area
C-1 1
C-2 1122.8
C-3 6479.9
C-4 20.2
C-7 1999.7
D-1/2 5576.6
M-1/2 5001.5
M-3 18.3
N 3761.9
O-1a 5213
S-1 386.5
S-2 51.4
W 2971.1
BEC Zones within CWPP Area
SBS mc 2 1864.7 ha
SBS dk 30, 739.2 ha
Burns Lake
CWPP Consultant: Susan McKellar
GIS Consultant: Mike Werrell / Michaella Collier
Date Drawn: 5/15/2019
Coordinate System: PCS Albers
Projection: Albers
Datum: North American 1983
0 0.5 1 2 3 4 Kilometers
N
W
E
S
SBS mc 2
PINKUT LAKE
DECKER LAKE
SBS dk
ESSF mc
ESSF mc
SBS mc 2
MAXAN LAKE
SBS mc 2
BURNS LAKE
ESSF mc
SBS mc2
SBS mc 2
ESSF mc
TCHESINKUT LAKE