Community Wildfire Protection Plan

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McLeod Lake Indian Band

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Executive Summary

The unincorporated community of McLeod Lake is located on McLeod Lake Indian Band (MLIB) Reserves #1 and #5. The community is located approximately 150 kilometres north of Prince George along the John Hart Highway (Hwy 97). The MLIB consists of 515 members with 110 members living at McLeod Lake. The MLIB is part of the Tse'khene group of peoples.

MLIB IR #1 is located on the shores of McLeod Lake and encompasses a total area of 877 hectares. The community infrastructure consists of 46 residential dwellings, a 7,200 square foot multipurpose community building, and various administration and public works buildings. MLIB IR #5 is located on the northeast shore of McLeod Lake and includes five residential dwellings. Both IR locations contain significant areas of wildland urban interface.

The Community Wildfire Protection Plan (CWPP) process was developed as a result of the catastrophic fire season in 2003 that resulted in the loss of over two hundred homes. As a result of this, the British Columbia Government commissioned an investigation to examine the conditions and causes that resulted in such a devastating fire season. The result of this investigation was the Filmon Firestorm Report, which provided the framework and logic for developing CWPP's in communities where urban interface areas exist.

The MLIB is located in a rural and remote setting where urban interface areas are common in the community. The forest surrounding the community has been subject to significant adverse impact from the mountain pine beetle infestation. As a result of this, substantial logging has taken place in the immediate vicinity of the community. However, high fire risk exists in unharvested areas. Harvested areas have been planted with conifer species and will have the potential to present a higher wildfire risk in the future. The objectives of this plan include:

- Identification of wildfire risk within the plan boundaries that could impact the McLeod Lake Indian Band;
- Spatial identification of possible CWPP treatment zones in the project area that would assist in reducing the wildfire threat to the reserve;
- Strategies to reduce the risk of wildfire impacts to homes and other key infrastructure located on the MLIB and surrounding area.
- Identification of zones to identify quantifiable management objectives and priority treatments zones.
- Identification of recommendations to mitigate the fire risk within the CWPP assessment area.

Field work and meetings with the MLIB Forestry Manager were conducted in November 2016. The following recommendations were developed for fire prevention and mitigation as a result:

1. Review funding opportunities for on reserve operational fuel treatments through the First Nations' Emergency Services Society.

2. Review funding opportunities for off reserve operational fuel treatments through the Forest Enhancement Society.

3. Establish a multi-agency communication protocol to coordinate emergency response procedures and periodically review plans relating to wildland urban interface threats.

4. Conduct community meetings to introduce FireSmart Principles to the community

5. Review funding opportunities for the FireSmart program and conduct a FireSmart assessment of community properties.

6. Encourage the implementation of FireSmart principles when developing new residential/commercial areas of the community.

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1.0 INTRODUCTION

The First Nations' Emergency Services (FNESS) has developed a program that includes funding through the Union of BC Municipalities (UBCM) to complete fuel treatment programs and plans on First Nations reserves that have been impacted by the mountain pine beetle. This FNESS program allows First Nations to address and carry out forest fuel management activities in order to protect the communities contained within. The Community Wildfire Protection Plan takes into account all other forest values and management activities must be ecologically appropriate, culturally and environmentally sensitive, and generally improves overall forest health (First Nations' Emergency Services British Columbia, 2011).

This CWPP encompasses McLeod Lake Indian Band Reserve #1, and takes into consideration IR #5. Proposed fuel management and wildfire threat assessment activities have been identified within the 2 kilometer CWPP buffer.

The majority of the forest surrounding IR#1 and IR#5 is comprised of pine leading stands. A component of spruce, aspen, and a small amount of subalpine fir can be found intermixed with pine. On wetter sites, or near riparian features, the forested stands are generally cottonwood, spruce and aspen leading. The area surrounding the plan boundary has been significantly impacted from the mountain pine beetle, and as a result, substantial logging has also taken place.

Wildfire historically has been a significant factor in the alteration of forest structures and functions in BC, and will continue to do so in the future. Rural communities such as the MLIB must take into consideration the impacts of Wildfire Urban Interface zones and forest fire threat when making short and long term planning decisions in the community. This document is intended to aid planners as they make decision about future development activities, community bylaws, and emergency planning.

2.0 COMMUNITY WILDFIRE PROTECTION PLAN OBJECTIVES

The objectives of this Community Wildfire Protection Plan include:

- Identification of wildfire risk within the plan boundaries could impact the McLeod Lake Indian Band (MLIB);
- Spatial identification of possible treatment areas in the project area that would assist in reducing the wildfire threat to the reserve;
- Strategies to reduce the risk of wildfire impacts to homes and other key infrastructure located on the MLIB and surrounding area.
- Identification of zones to identify quantifiable management objectives and priority treatments units; and
- Identification of treatments and priority areas and determination of specific fuel management and wildfire threat reduction treatment recommendations.

2.0 DESCRIPTION OF THE PLAN AREA

2.1. Existing Forested Stands Surrounding the Community

IR#1 is surrounded by mature pine leading stands with a component of hybrid white spruce, aspen, and subalpine fir. These pine leading stands have been affected by the mountain pine beetle. Near McLeod Lake and McLeod River, and on wetter locations, the stand is comprised of mature aspen and cottonwood.

2.2. CWPP Assessment Area

The CWPP assessment area is limited to the 2 km buffer surrounding IR #1. The plan also takes into consideration the inhabited areas of IR #5

2.3. Reserve Lands

The McLeod Lake Indian Band includes 21 reserves and encompasses 20,053 ha. The main community is located on the MLIB reserves #1 and #5 (IR#1, IR#5) located off Carp Lake Road, west of Highway 97, on the shores of the north end of McLeod Lake. The nearest community to the MLIB is the village of McLeod Lake, located 150km north of the city of Prince George, BC, along Highway 97. MLIB IR#1 contains all of the reserve community facilities (McLeod Lake Indian Band, 2013). The CWPP will be applied to IR#1.

The McLeod River runs through the northern section of IR#1, and the Pack River is located to the northeast of the reserve.

The MLIB consists of 515 members. IR#1 is the most populated of the reserves with 110 residents. IR#1 includes 129 structures including multiple administration buildings, public works buildings, and social/educational buildings. Easy access to IR#1 is limited to the Carp Lake Road and a wooden bridge over the Pack River. Secondary access is over 120 kilometres away via the Davie Muskeg Road at Bear Lake. Community emergency planning should consider this, as any disruption in access via the Carp Lake road would result in a significant delay from outside agencies. An overview map of reserve, Crown, and private lands is located in Appendix D.

2.4. Crown Land, Parks and Protected Areas, and Private Land

The majority of the CWPP assessment area is located on federal reserve lands and Crown land. Crown land comprises 55% of the total area within the CWPP assessment area, while federal/reserve lands represent 27% of the total area. Private land only represents 4% of the total assessment area, while McLeod Lake, and other lakes represent nearly 14%. The breakdown of land ownership and type is presented in Table 1.

Table 1. Land ownership and type within the CWPP assessment area

Land Ownership/Type	Area (ha)	Percentage of Total
Federal/Reserve Lands - McLeod Lake IR#1	877.1	15.1%
Federal/Reserve Lands - McLeod Lake IR#5	597.7	10.3%
Federal/Reserve Lands - Pack River IR#2	94.7	1.6%

Land Ownership/Type	Area (ha)	Percentage of Total
Private Land	230.0	4.0%
Lakes	780.5	13.5%
Utility - Spectra Pipeline ROW	16.1	0.3%
Crown Land	3199.5	55.2%
Parks and Protected Areas	0.0	0.0%
Total	**5795.6**	

2.5. Biogeoclimatic Zone

McLeod Lake IR#1 is located in the Sub-Boreal Spruce moist cool Mossvale variant (SBSmk1). The SBSmk1 is located on a large plateau northwest of the city of Prince George, continuing into some valleys in the interior Omineca Mountains. The climate of this variant is considered to be intermediate with respects to temperature and precipitation; it best represents the sub-boreal climate with long, snowy winters and moist cool summers. The elevation of this variant is 750 – 1070 meters.

Recurrent disturbance in this variant has led to forested stands primarily dominated by lodgepole pine and trembling aspen. The climax stands in this variant are dominated by hybrid white spruce. Subalpine fir is largely absent. Douglas fir occurs on drier, warmer aspects, typically on coarser soils. Black spruce occurs in wetland areas, or with lodgepole pine on poorer upland sites. Paper birch occurs sporadically, and generally with Douglas fir, but can be found in pure stands near Prince George. Black cottonwood is found in riparian areas, usually associated with hybrid white spruce. (Ministry of Forests, Lands and Natural Resource Operations)

2.6. Natural Disturbance Type (NDT) Zones Within the CWPP Area

IR#1 is located in NDT zone 3; ecosystems with frequent stand-initiating events. These forested ecosystems have experienced frequent wildfires of varying sizes. The largest fires in the province generally occur in this NDT. The mosaic of burned and unburned forested stands resulted in even-aged regenerating stands, surrounded by mature forest. Frequent outbreaks of defoliating insects and root diseases have impacts on the forested stand ranging from low to severe, causing tree mortality, canopy gaps, and dead trees and decaying logs. Riparian areas in this NDT have special habitat characteristics, which are not found on upland sites. The mean interval for fire disturbance in the SBS is about 150 years. (BC Ministry of Forests, 1995)

2.7. Forest Health

Bark beetles pose the greatest concern in the Prince George TSA, and specifically, in the Prince George Forest District, followed by pine stem rusts and mountain pine beetle. The forested stand surrounding the MLIB has been detrimentally impacted by the mountain pine beetle. Much of the beetle killed pine has been clear cut in the south of the reserve, and replanted with conifer seedlings.

The percentage of mountain pine beetle attack within the forested stands surrounding MLIB is presented in Table 2, while the ranking of forest health factors in the Prince

George Forest District is presented in Table 3. A map identifying mountain pine beetle affected areas is located in Appendix E.

Table 2. Percentage of mountain pine beetle attack in forested stands within the 2km CWPP assessment area

MPB % Range	Area (ha)
Unknown	117.3
0-20	345.1
21-40	151.6
41-60	111.5
61-80	192.4
81-100	1436.6
Total	**2354.5**

Table 3. Ranking of forest health factors in the Prince George Forest District

Ranking	Forest Health Factor
Very High	Spruce beetle
	Douglas-fir beetle
Medium	Mountain pine beetle
	Western gall rust
	Commandra blister rust
	Stalactiform blister rust
Low	Red band needle blight – *Dothistroma*
	Lodgepole pine dwarf mistletoe
	Engraver beetles - *Ips pini*
	Tomentosus root disease
	Forest tent caterpillar
Very Low	Large aspen tortrix
	Western balsam bark beetle

(BC Ministry of Forests, Lands, and Natural Resource Operations, 2011)

2.8. Local Wildfire History and Fire Weather

The community's fire weather is influenced by its location within the Nechako Lowland and the McGregor Plateau, known as the Fraser Basin. This ecoregion is characterized by a gently rolling surface with layers of thick glacial drift. The mean annual temperature for this area is 3°C, while the summer mean is 12.5°C, and the winter mean is -8°C. Mean annual precipitation has a range of 600-800mm. (Centre for Land and Biological Resources Research, 1996)

The following data was extracted from the McLeod Lake weather station located approximately 29 km southwest from the MLIB. The weather station collects temperature, relative humidity, wind direction and speed, and precipitation amounts. This data allows for calculation of the fine fuel moisture code (FFMC), duff moisture code (DMC), drought code (DC), initial spread index (ISI), and buildup index (BUI), which

then translates into the fire weather index (FWI) and the subsequent danger rating. There have been many small, low intensity fires throughout the McLeod Lake area, with few larger than 10ha. A table listing all historic wildfires within a 20 kilometer radius of MLIB is located in Appendix B.

May and June have the highest recoded average of high fire danger rating while June and August have the highest recorded average of extreme fire danger rating days over the last 16 years or data. June, July, and August average the highest temperature, while July has the highest amount of precipitation. The wind speed average throughout the years varies by a few kilometers per hour, but is highest in the spring and fall months. All weather station data is presented in Table 4 and Figures 1 through 3 below. The data presented is for the months considered the 'wildfire season'.

Table 4. Number of days of extreme and high fire danger rating between 2000 and 2016 at the McLeod Lake weather station

Year	Danger Class	April	May	June	July	August	Sept	Oct	Total Days
2016	Extreme						ND	ND	0
2016	High		11	1	3	2	ND	ND	17
2015	Extreme	ND	5	6	4				15
2015	High	ND	10	13	11		2		36
2014	Extreme	ND			2	21	3		26
2014	High	ND	2	5	15	8	13		43
2013	Extreme	ND							0
2013	High	ND		3	2		8		13
2012	Extreme	ND	1				4		5
2012	High	ND	5	4	15	11	14		49
2011	Extreme	ND		3					3
2011	High	ND	2			1	1		4
2010	Extreme	ND		3					3
2010	High	ND	5	15		1		12	42
2009	Extreme	ND							0
2009	High	ND	1	11	8	14	6		40
2008	Extreme	ND							0
2008	High	ND		6	7	5	4	6	28
2007	Extreme								0
2007	High			11	3				14
2006	Extreme			10	4	1	6		21
2006	High		15	15	3	10	15	7	65
2005	Extreme					1			1
2005	High		15	17		5			37
2004	Extreme								0
2004	High			7	2				9

Year	Danger Class	April	May	June	July	August	Sept	Oct	Total Days
2003	Extreme								0
2003	High		7	13	1	2	8	2	33
2002	Extreme								0
2002	High			9	1				10
2001	Extreme								0
2001	High		9	6			1		16
2000	Extreme								0
2000	High			3	5	2			10

*ND = no data. No data was recorded for the month.

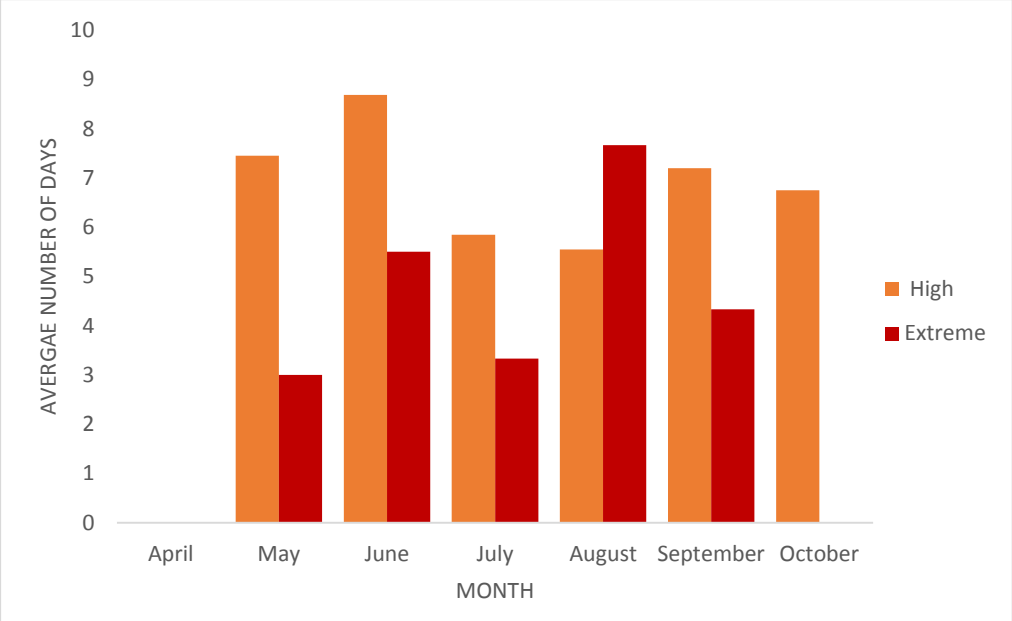

Figure 1. Average number of days reporting high and extreme fire danger rating between 2000 and 2016 at the McLeod Lake weather station

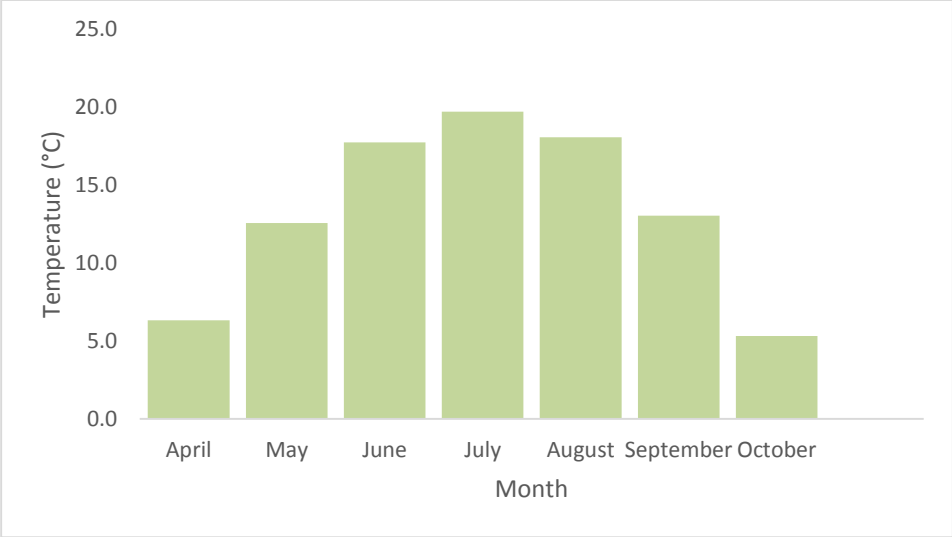

Figure 2. Average monthly temperature from 2000 to 2016 at the McLeod Lake weather station

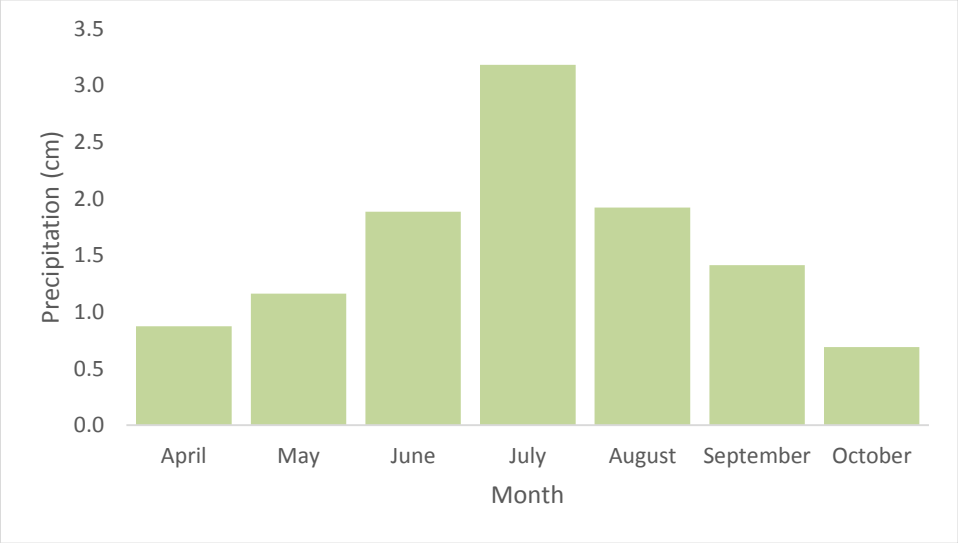

Figure 3. Average monthly precipitation from 2000 to 2016 at the McLeod Lake weather station

Figure 4. Average monthly wind speed from 2000 to 2016 at the McLeod Lake weather station

3.0 RESOURCE ISSUES AND OPERATIONAL CONSTRAINTS

3.1. Higher Level Planning

The IR#1 area falls within the Prince George Land and Resource Plan management area, but the CWPP assessment area overlaps the Mackenzie Land and Resource Plan management area in the northernmost section of IR#1. Activities related to the CWPP will not be impacted by either land and resource plan.

3.2. Operational Constraints

The CWPP area is located in a relatively heavily used area of the province with many different tenure holders within the 2 kilometer CWPP zone. Fuel treatment activities may be constrained by tenure holders such as forest licensees, other industrial tenure holders, trappers, and cultural and heritage resources in the area. Access is relatively good throughout most of the CWPP area; however, riparian areas are abundant.

3.3. Consideration of Traditional Uses and Non-Forestry Resources

The CWPP assessment area overlaps trapline boundaries for traplines TR0724T011, TR0724T010, TR0716T011, and TR0716T012. Berry collection and hunting for food purposes are common activities in the area. Any proposed treatment activates will need to address cultural and heritage values as per the prescription and federal timber permit.

3.4. Wildlife

The wildlife in the SBSmk1 take advantage of the special habitat characteristics provided by the frequent stand disturbance. Shrub dominated wetlands provide important habitat for moose, beaver, muskrat, mink, otter, northern harrier, and sandhill cranes in some areas. Riparian habitats located in forested stands are used by grizzly bear and black bear in the spring, along with moose, white-tailed deer, lynx, and ruffed grouse. Moose, gray wolf, bald eagle, osprey, mink, otter, and muskrat take advantage of small lakes within the forested stand. Mature forest stands provide habitat for wolverine, marten, red squirrel, spruce grouse, and great horned owl.

Many of the furbearers and large animals in this variant are important species for hunting and trapping in the McLeod Lake area.

3.5. Species at Risk

The Species and Ecosystems at Risk WMS file used was used to explore potential species and ecosystems at risk within IR#1 and the surrounding 2 km assessment area.

No ecosystems or species at risk were identified within IR#1, or the assessment area.

4.0 WILDFIRE THREAT DETERMINATION AND THREAT REDUCTION OPTIONS

4.1. Wildfire Threat Rating System

Wildfire is a key component of ecosystems in British Columbia. Since the early 1900s, wildfire suppression efforts have significantly reduced wildfire activity on the landscape with the intention of protecting values at risk, including timber. However, the present wildfire situation in British Columbia is presenting challenges:

- Continued growth of the wildland urban interface (WUI) and the expansion of infrastructure related to energy development (and other industries) on the forested land base;
- Suppression of naturally occurring wildfires has contributed to unhealthy forest and range ecosystems and habitats, and unnaturally high fuel loads;
- The effects of climate change are resulting in longer and more extreme fire seasons.

The objective of landscape fire management is to identify and quantify the wildfire threat across the landscape using the best available modelling tools. Manager can then modify the distribution of fuels on the landscape to mitigate the wildfire threat. (BC Wildfire Service, 2015)

Field plots to assess the wildland urban interface threat class were established in Zone 1 polygons of the CWPP assessment area. All field plots resulted in either a high or extreme Wildfire Behavior Threat Class and Wildland Urban Interface Threat Class. The main driver to the high or extreme ratings was the presence of dense multilayered pine leading stands and the close proximity to structures. A wildfire threat rating map is located in Appendix F.

4.2. Provincial Strategic Treatment Analysis (PSTA) Mapping

PSTA mapping was completed through a GIS exercise using the provincially available PSTA data from the Integrated Cadastral Information Society. PSTA mapping has been identified on the maps attached to this document (Appendix G through I). PSTA polygons were considered when determining the proposed CWPP zones. PSTA mapping data is presented in Appendix C.

4.3. FireSmart Program

There are seven steps in order to become a FireSmart community:

1. Education

Community education of residents that live within a forested community is required in order for the residents to become aware of the hazards that surround them, and what to do to abate such hazards.

2. Vegetation management

Vegetation management removes or reduces the fuel loading in areas, especially near structures, as reducing the fuel load can reduce or slow the spread of a wildfire. While removing trees entirely may not be practical, pruning trees, spacing, and removal of matted grass can substantially slow the growth and spread of a fire.

3. Legislation and planning

Legislation or bylaws can help a community deal with nuisance or neglected properties that put other's properties and homes at risk, as well as providing guidance for developers that intend on building new development within the community.

4. Development considerations

Standards for building development can reduce risk by managing materials that are used in new construction and renovation of existing structures. Buildings may be required to use less flammable materials in construction or renovation, and FireSmart landscaping may be implemented. Roadways, water supply, and utilities placement should all be considered in new development.

5. Interagency cooperation

Interagency cooperation is critical in times of emergency. A coordinated effort ensures rapid and efficient response in times of crisis.

6. Emergency planning

The community requires an emergency plan in order to facilitate the effective response to any crisis that should threaten the community. A wildfire emergency response plan should contain the following:

- Local phone numbers and contacts;
- List of contacts for fire information;
- Evacuation plans;
- List of fire suppression resources;
- Documentation of fire suppression training conducted.

7. Cross training

Ensure responders living in the community, or adjacent, are trained in both structural and wildland firefighting. Cross training with municipal fire departments and wildland agencies ensure that responders can effectively respond to multiple instances of fire.

8. Determine the costs and viability of alternative fire protection options

Cost analysis of alternative fire protection options should be undertaken in order to aid in determining fire protection needs and methods.

(Adlard Environmental Ltd., 2013),

4.4. Additional Factors Considered in Determining Treatment Priority

While plot specific data was collected along with GIS analysis of PSTA data, other factors went into the development on CWPP zones. Those factors were:

- Proximity to structures
- The type of structures (residential, schools, community building)
- Human ignition potential
- Establishment of a continuous fire suppression zone

Areas of moderate threat have been included in CWPP Zone 1 to promote the establishment of a continuous fire suppression zone.

4.5. Forest Fuel Management – Ground Treatment Methods and Activities

Wildfire threat reduction options are determined through literature research, site assessments, and professional guidance. The objective of treatments is not to prevent all fires, but rather to reduce the probability of catastrophic fire behaviour and subsequent risk to residential areas.

Options for fuel management include both mechanical and manual treatments and will take into consideration budget, visual values, impacts to residents, and operational constraints. It is unlikely that only one treatment will be sufficient; a combination of treatments will be required to address all fuel layers. Maintenance of fuel breaks will be periodically required (Ministry of Forests, Lands and Natural Resource Operations).

Treatments should be targeted for fall and winter to avoid bird nesting season and the fire hazards associated with the summer months. Common forest fuel management options are discussed below.

4.5.1. Layout of Treatment Areas

Treatment areas should be identified in the field and established with a fuel management prescription that has been completed by a forest professional. Treatment boundaries should take into consideration existing fuel breaks such as existing natural openings, roads, or cut blocks. Aligning fuel treatment boundaries with existing natural or manmade features will increase the effectiveness of treatment activities.

4.5.2. Thinning/Brushing

Thinning or spacing of juvenile trees provides an opportunity to influence density and espacement which lowers overall crown fuel and bulk density. Thinning reduces ladder fuels and the continuity of vertical fuels (Ministry of Forests, Lands and Natural Resource Operations).

Intermediate, or commercial thinning provides an opportunity to remove some merchantable material which may cover the cost of the thinning treatment. Commercial thinning also allows for the selection of species to be left behind, especially older or fire resistant species (Fd, Py, Pw, Lw). As with juvenile thinning, crown continuity and bulk density are reduced and ladder fuels can be nearly eliminated if thinned from below (Ministry of Forests, Lands and Natural Resource Operations).

4.5.3. Pruning

Pruning involves the cutting of the branches on the lower bole of trees within the treatment area. Pruning will increase the height of the crown on a tree, resulting in less ladder fuel, which in turn reduces the likelihood of a surface fire reaching the crown (Ministry of Forests, Lands and Natural Resource Operations). Pruned branches can be chipped and dispersed, or branches can be lopped and scattered, or burned.

4.5.4. Piling and Burning

Forest fuels are collected into piles and burned onsite. This reduces the fuel load in the vicinity.

4.5.5. Prescribed Burning

Prescribed fire is a less predictable tool to be used to influence stand structure, but provides a chance to reduce both surface and ladder fuels. Controlled burning reduces the cover of flammable vegetation, fine and coarse woody debris, and the lowest ladder fuels. Mechanical site preparation may be used to reduce the amount of coarse woody debris prior to burning (Ministry of Forests, Lands and Natural Resource Operations).

4.5.6. Timber Harvesting

Timber harvesting may be implemented to help offset the costs of fuel treatment activities. This method of fuel treatment is a very viable option for the MLIB, as there is a band owned logging company (Duz Cho Logging) that would be available to harvest treatment areas. Zones 1-3 present good opportunities for commercial timber harvesting. Specifically, the area located on the north side of Carp Lake Road.

4.5.7. Project Implementation, Monitoring, and Quality Assurance Reporting

Fuel treatment activities must be supervised by a qualified professional and completed in accordance with the approved fuel management prescription. Treatments must be identified in the field with flagging at eye height. A comprehensive pre-work orientation should take place with field crews and regular field inspections should be completed by

the project supervisor. Cultural and heritage resource must be identified prior to treatment activities, as per the prescription.

4.5.8. **Community Capacity and Project Resources**

The McLeod Lake Indian Band fully owns and operates Duz Cho Logging Ltd., which operates primarily in the areas of McLeod Lake, the Williston Lake Reservoir, and North Central BC. Duz Cho has the ability to harvest timber, log haul, and build roads. (Duz Cho Logging Ltd., 2016)

5.0 MCLEOD LAKE INDIAN BAND COMMUNITY WILDFIRE PROTECTION PLAN

5.1. CWPP Assessment Area Zonation

The 2 kilometer CWPP assessment area surrounding MLIB IR#1 was divided into three zones which were identified based on the values at risk within each zone. The following describes each zone and the management goals and objectives, and strategies to achieve these goals. A map identifying the CWPP zones is located in Appendix J.

CWPP Zone 1

Zone 1 area: 165 hectares.

Zone 1 encompasses all on-reserve structures, and those areas of the highest wildfire risk. A 500 meter buffer around IR#1 plus an additional 200-300 meters to the west of the community has been identified to address the most critical wildfire urban interface areas.

The management objectives in zone 1 are to:

1. Maintain a buffer between the surrounding forest and urban areas of the community.
2. Reduce the amount of forest fuel that is present in the zone.
3. Reduce the crown density to prevent the spread of a running crown fire.
4. Reduce the ladder fuels that are present within the zone.
5. Promote stand conversion to deciduous trees and shrubs.

The strategies to achieve the management objectives are:

1. Implement on the ground fuel treatment activities in all forest zone 1 areas.
2. Develop a maintenance schedule to assess and treat previously treated areas.
3. Practice adaptive management based on regular monitoring.

CWPP Zone 2

Zone 2 area: 874 hectares.

Zone 2 encompasses the forested areas surrounding the community of MLIB and those areas of which are at moderate to extreme risk of wildfire.

The management objectives in zone 2 are to:

1. Monitor the zones areas for future recruitment into a higher threat classification.

2. Reduce the potential for future Wildland Urban Interface threats.

The strategies to achieve the management objectives are:

1. Ensure future development in these areas takes into consideration the Wildland Urban Interface threat.

2. Utilize existing fire breaks and FireSmart principles when planning future development.

3. Practice adaptive management based on regular monitoring.

4. Plan future timber harvesting activities with fire management and community protection in mind.

CWPP Zone 3

Zone 3 area: 957 hectares.

Zone 3 encompasses areas within the CWPP assessment area that are currently a lower fire risk, such as areas of existing disturbance. While these areas are currently a lower threat, they should be monitored for future wildfire threats, specifically harvested areas that have been planted with conifer species.

The management objectives in zone 3 are to:

1. Monitor the zones areas for future recruitment into a higher threat classification.

2. Reduce the potential for future Wildland Urban Interface threats.

The strategies to achieve the management objectives are:

1. Ensure future development in these areas takes into consideration the Wildland Urban Interface threat.

2. Utilize existing fire breaks and FireSmart principles when planning future development.

3. Practice adaptive management based on regular monitoring.

4. Plan future timber harvesting activities with fire management and community protection in mind.

5.2. CWPP Zones Treatment Area Priority and Budget

5.2.1. Priority Determination and Zonation

Treatment priority has been identified based on the zonation exercise identified above. Recommended fuel management treatment activities have been identified in CWPP Zone 1.

Prioritization of CWPP zones and treatment activities is based on:

- Proximity to development – protection of life and property
- MPB affected pine component
- Wildfire threat assessment score
- Accessibility and cost constraints

Table 5. Zones by priority

Priority	Description	Zone	*Area (ha)
1	Mountain pine beetle infested areas located within Zone 1	1	85
2	Other conifer leading areas located within Zone 1 (to maintain a continuous fire suppression zone)	1	45
3	Mountain pine beetle infested areas in Zone 2	2	875
4	Maintenance of existing fire breaks within Zone 1 (cut blocks and right of ways)	1	50
5	Mountain pine beetle infested areas in Zone 3	3	955

*Areas have been estimated based on perimeter proximity to structures

5.2.2. Budget

The following treatment operations budget is an estimate based on historical values for similar treatments conducted in other regions. The actual cost will be determined once final treatment size and operational fuel management requirements are determined on site via the operational fuel treatment prescription. It is anticipated that fuel treatment costs in zone 2 and 3 would be primarily completed by commercial timber harvesting activities. As such much of the treatment cost would be offset or completely recovered through the sale of timber.

Table 6. Operational budget estimate

Priority	Area (ha)	Cost/ha	Total Cost ($)
1	85	$5000	$425,000
2	45	$5000	$225,000
3	875	$5000	$4,375,000

4	955	$5000	$4,775,000
5	50	$5000	$250,000

At the time of this CWPP, there is only one opportunity for funding available for wildfire threat reduction on Federal Crown lands. The First Nations' Emergency Services Society (FNESS) is charged with distributing funds from the Union of BC Municipalities (UBCM) to Regional Districts, municipalities, and First Nations to plan and implement fuel management projects. Contacts for FNESS and UBCM are located in Section 6.4 Contacts.

Funding for fuel treatment activities on Crown lands may be available through the Forest Enhancement Society of BC. The BC government has announced initial funding of 85 million dollars with focus of:

a) Reduction of wildfire risk on crown lands, especially stands impacted by mountain pine beetle.

b) Rehabilitation of stands damaged by fire or high wildfire risk.

c) Wildlife habitat restoration in concert with A and B.

d) Raising awareness of wildfire risk and potential mitigation actions for rural property owners and communities.

6.0 RECOMMENDATIONS

Recommendations	Target Action Date	Priority
Present CWPP findings and summary of Wildfire Threat to Chief and Council	2017	1
Research and secure funding through FNESS for the completion of an on reserve fuel treatment prescription.	2017	2
Research and secure funding from the Forest Enhancement Society for funding to complete fuel management prescriptions and treatment on off reserve areas.	2017	3
Research and secure funding for the implementation of FireSmart planning and education within the community	2017	4
Conduct a fire smart assessment within the community and implement a community education program to allow residents to assess their own homes.	2017	5
Establish a multi-agency relationship between firefighting resources on reserve and provincial/federal resources off reserve. Specifically, between the MLIB volunteer fire department and outside agencies.	2017	6
Develop mutual aid agreements for wildfire and structural fire occurrences with local fire departments, Mackenzie/Prince George, and MLIB	2017	7

6.1. FireSmart Principles

FireSmart fuel break recommendations include:

1. Spacing or thinning the overstory to 3-6m crown spacing
2. Modification of ladder fuels (i.e. spacing of understory to 4 meters and increasing crown base height to 2 meters)
3. Modification of existing surfaced fuels including dead and downed materials

(The Government Of British Columbia)

Together with examples from other communities and agencies, the FireSmart principals are incorporated into wildfire threat reduction options for the project area. While new developments within the MLIB can be designed with FireSmart hazard reduction methods in mind, existing dwellings can only be affected if residents are aware and willing to implement recommendations; consequently, FireSmart information needs to be presented to the residents of MLIB including options for reducing the wildfire hazard to their own properties.

6.2. Landscape Level Fire Management

Fire breaks are either naturally occurring or anthropogenic. The MLIB has the benefit of being located on the banks of a large lake that has the ability to act a natural fire break. The McLeod River to the west of the community, at approximately 20 meters wide, may behave as a nominal fire break. The Pack River to the north of the community may also act as a natural fuel break. The recent clear cutting of the forests to the south of the community reduces the risk of the spread of a wildfire from the south exponentially.

Landscape Level Fire Management must be conducted in conjunction with timber tenure holders and other agencies that have significant interests in the district, such as the BC

Oil and Gas Commission (BC OGC) and the Ministry of Forests Lands and Natural Resource Operations (FLNRO). Through consultation and partnership, the following activities may reduce wildfire threat across the landscape and further improve the long term protection of the MLIB:

1. Selective harvesting treatment in pine dominant or co-dominant stands within the operating areas adjacent to the MLIB;

2. Maintenance of visual quality objectives along McLeod Lake;

3. Fuel management practices for slash and coarse woody debris retention in harvested areas;

4. Increased access with road right of ways acting as fire breaks;

5. Identification and development of fire suppression resources: water supply, access to contractors and equipment;

6. Aggressive fuel management around culturally significant sites outside of the MLIB boundaries.

6.3. Emergency Response Planning

Develop a written Emergency Response Plan with procedures to follow in the event of a wildfire or structural fire threat on reserve lands, including:

a) Local phone numbers and contacts;

b) List of contacts for fire information;

c) Evacuation plans;

d) List of fire suppression resources;

e) Documentation of fire suppression training conducted.

6.4. Contacts

Table 7. McLeod Lake Indian Band contacts

Band and Council for the June 2014 - June 2017 Term	
Chief: Derek Orr	On Reserve Councillor: Elizabeth Solonas
Elder Councillor: Zepheria Isadore	On Reserve Councillor: Verne Solonas
Youth Councillor: Destiny Bear	Off Reserve Councillor: Joe Alderliesten
Off Reserve Councillor: Yasmin Ali	
MLIB Land Management Department Manager: Alec Chingee	
MLIB Forestry Manager: Esa Aatelma	
Band Office Phone: 250-750-4415	
Band Office Toll Free: 1-888-822-1143	

Table 8. Partnership contacts

Contact	Position	Contact Number
Prince George Fire Centre, Bob Harlow	Forest Protection Officer	250-614-7532
Ministry of Forests, Lands, and Natural Resource Operations, Kelly Osborne (PG)	Fire and Fuel Management Officer	250-356-2025
FNESS, Jeff Eustache	Manager, Forest Fuel Management Program	1-888-377-7600
Union of BC Municipalities, Peter Ronald	Programs Officer	250-356-2947
Forest Enhancement Society of BC, Greg Anderson	Executive Director	778-765-0938
Ministry of Forests, Lands, and Natural Resource Operations, Ian Hamann (PG)	Timber Sales Manager	250-614-7485
Ministry of Forests, Lands, and Natural Resource Operations, Len Stratton (PG)	Woodlands Manager	250-614-7548
Ministry of Environment (PG)		250-565-6135
Ministry of Transportation and Infrastructure (PG)		250-565-4410
Fisheries and Oceans Canada		604-666-0384
BC Oil and Gas Commission Office (FSJ)		250-794-5200
First Nations Forestry Council		604-971-3448
Canfor Prince George	Timber licensee	250-962-3500
Canfor Mackenzie	Timber licensee	
PNG – Pacific Northern Gas Ltd.	Pipeline operator	1-800-663-1173
Spectra Energy (PG)	Pipeline operator	250-960-2000
Yellowhead Road and Bridge (PG)	Road maintenance contractor	1-800-218-8805
FortisBC Emergency	Natural gas provider	1-800-663-9911
BC Hydro Emergency	Electricity provider	1-888-769-3766
Telus	Telephone/internet provider	1-888-811-2323

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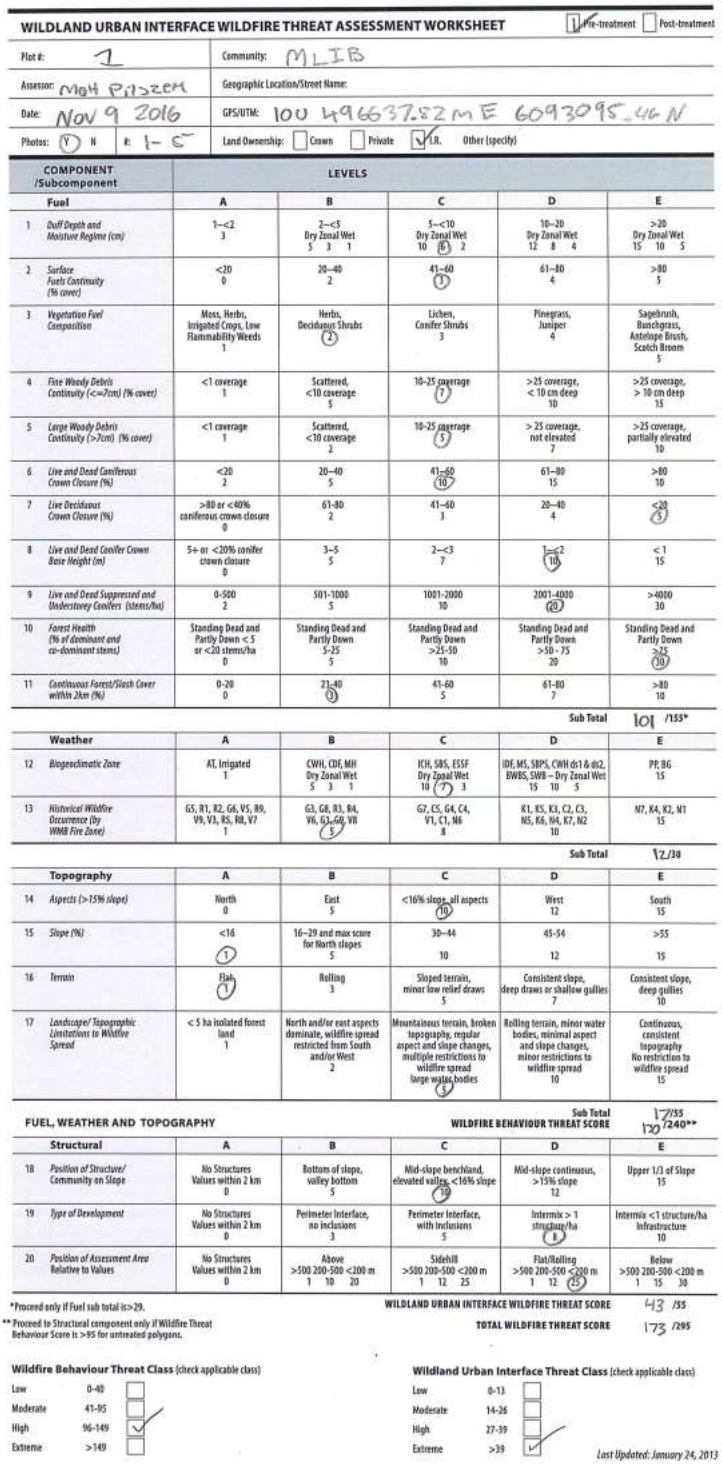
Appendix A: Wildfire Threat Assessment – Forms and Pictures



WILDLAND URBAN INTERFACE WILDFIRE THREAT ASSESSMENT WORKSHEET [1] Pre-treatment [ ] Post-treatment

Plot #: 1 | Community: MLIB

Assessor: MGH PRSZEM | Geographic Location/Street Name:

Date: Nov 9 2016 | GPS/UTM: 10U 496637.82mE 6093095.46N

Photos: (Y) N #: 1-5 | Land Ownership: [ ] Crown [ ] Private [✓] I.R. [ ] Other (specify)

	COMPONENT /Subcomponent	LEVELS				
	Fuel	**A**	**B**	**C**	**D**	**E**
1	*Duff Depth and Moisture Regime (cm)*	1–<2 3	2–<5 Dry Zonal Wet 5 3 1	5–<10 Dry Zonal Wet 10 (6) 2	10–20 Dry Zonal Wet 12 8 4	>20 Dry Zonal Wet 15 10 5
2	*Surface Fuels Continuity (% cover)*	<20 0	20–40 2	41–60 (3)	61–80 4	>80 5
3	*Vegetation Fuel Composition*	Moss, Herbs, Irrigated Crops, Low Flammability Weeds 1	Herbs, Deciduous Shrubs (2)	Lichen, Conifer Shrubs 3	Pinegrass, Juniper 4	Sagebrush, Bunchgrass, Antelope Brush, Scotch Broom 5
4	*Fine Woody Debris Continuity (<=7cm) (% cover)*	<1 coverage 1	Scattered, <10 coverage 5	10–25 coverage (7)	>25 coverage, < 10 cm deep 10	>25 coverage, > 10 cm deep 15
5	*Large Woody Debris Continuity (>7cm) (% cover)*	<1 coverage 1	Scattered, <10 coverage 2	10–25 coverage (5)	> 25 coverage, not elevated 7	>25 coverage, partially elevated 10
6	*Live and Dead Coniferous Crown Closure (%)*	<20 2	20–40 5	41–60 (10)	61–80 15	>80 10
7	*Live Deciduous Crown Closure (%)*	>80 or <40% coniferous crown closure 0	61-80 2	41–60 3	20–40 4	<20 (5)
8	*Live and Dead Conifer Crown Base Height (m)*	5+ or <20% conifer crown closure 0	3–5 5	2–<3 7	1–<2 (10)	< 1 15
9	*Live and Dead Suppressed and Understorey Conifers (stems/ha)*	0-500 2	501-1000 5	1001-2000 10	2001-4000 (20)	>4000 30
10	*Forest Health (% of dominant and co-dominant stems)*	Standing Dead and Partly Down < 5 or <20 stems/ha 0	Standing Dead and Partly Down 5-25 5	Standing Dead and Partly Down >25-50 10	Standing Dead and Partly Down >50 - 75 20	Standing Dead and Partly Down >75 (30)
11	*Continuous Forest/Slash Cover within 2km (%)*	0-20 0	21-40 (1)	41-60 5	61-80 7	>80 10
					Sub Total	101 /155*
	Weather	**A**	**B**	**C**	**D**	**E**
12	*Biogeoclimatic Zone*	AT, Irrigated 1	CWH, CDF, MH Dry Zonal Wet 5 3 1	ICH, SBS, ESSF Dry Zonal Wet 10 (7) 3	IDF, MS, SBPS, CWH ds1 & ds2, BWBS, SWB – Dry Zonal Wet 15 10 5	PP, BG 15
13	*Historical Wildfire Occurrence (by WMB Fire Zone)*	G5, R1, R2, G6, V5, B9, V9, V3, R5, R8, V7 1	G3, G8, R3, R4, V6, G1, G9, V8 (5)	G7, C5, G4, C4, V1, C1, N6 8	K1, K5, K3, C2, C3, N5, K6, N4, K7, N2 10	N7, K4, K2, N1 15
					Sub Total	12/30
	Topography	**A**	**B**	**C**	**D**	**E**
14	*Aspects (>15% slope)*	North 0	East 5	<16% slope, all aspects (10)	West 12	South 15
15	*Slope (%)*	<16 (1)	16–29 and max score for North slopes 5	30–44 10	45-54 12	>55 15
16	*Terrain*	Flat (1)	Rolling 3	Sloped terrain, minor low relief draws 5	Consistent slope, deep draws or shallow gullies 7	Consistent slope, deep gullies 10
17	*Landscape/ Topographic Limitations to Wildfire Spread*	< 5 ha isolated forest land 1	North and/or east aspects dominate, wildfire spread restricted from South and/or West 2	Mountainous terrain, broken topography, regular aspect and slope changes, multiple restrictions to wildfire spread large water bodies (5)	Rolling terrain, minor water bodies, minimal aspect and slope changes, minor restrictions to wildfire spread 10	Continuous, consistent topography No restriction to wildfire spread 15
					Sub Total	17/55
	FUEL, WEATHER AND TOPOGRAPHY				**WILDFIRE BEHAVIOUR THREAT SCORE**	120/240**
	Structural	**A**	**B**	**C**	**D**	**E**
18	*Position of Structure/ Community on Slope*	No Structures Values within 2 km 0	Bottom of slope, valley bottom 5	Mid-slope benchland, elevated valley, <16% slope (10)	Mid-slope continuous, >15% slope 12	Upper 1/3 of Slope 15
19	*Type of Development*	No Structures Values within 2 km 0	Perimeter Interface, no inclusions 3	Perimeter Interface, with Inclusions 5	Intermix > 1 structure/ha (8)	Intermix <1 structure/ha Infrastructure 10
20	*Position of Assessment Area Relative to Values*	No Structures Values within 2 km 0	Above >500 200-500 <200 m 1 10 20	Sidehill >500 200-500 <200 m 1 12 25	Flat/Rolling >500 200-500 <200 m 1 12 (25)	Below >500 200-500 <200 m 1 15 30
					WILDLAND URBAN INTERFACE WILDFIRE THREAT SCORE	43 /55
					TOTAL WILDFIRE THREAT SCORE	173 /295

*Proceed only if Fuel sub total is>29.

** Proceed to Structural component only if Wildfire Threat Behaviour Score is >95 for untreated polygons.

Wildfire Behaviour Threat Class (check applicable class)

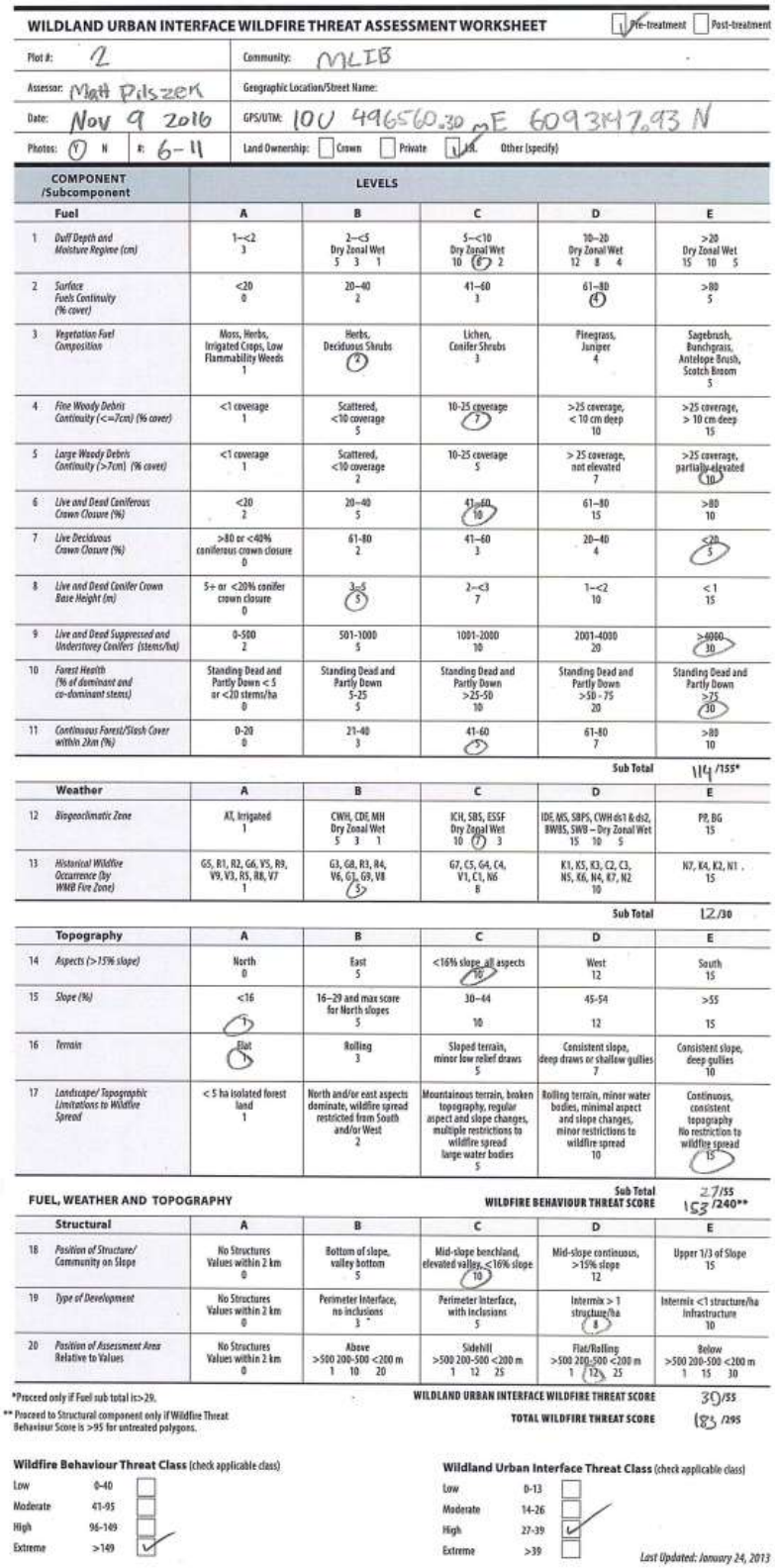
Low	0-40	[ ]
Moderate	41-95	[ ]
High	96-149	[✓]
Extreme	>149	[ ]

Wildland Urban Interface Threat Class (check applicable class)

Low	0-13	[ ]
Moderate	14-26	[ ]
High	27-39	[ ]
Extreme	>39	[✓]

Last Updated: January 24, 2013

Figure 5. Threat plot 1



WILDLAND URBAN INTERFACE WILDFIRE THREAT ASSESSMENT WORKSHEET ☑ Pre-treatment ☐ Post-treatment

Plot #: 2 | Community: MLIB

Assessor: Matt Pilszek | Geographic Location/Street Name:

Date: Nov 9 2016 | GPS/UTM: 10U 496560.30 mE 6093447.93 N

Photos: ☑ N # 6-11 | Land Ownership: ☐ Crown ☐ Private ☑ FN ☐ Other (specify)

COMPONENT /Subcomponent		LEVELS				
	Fuel	**A**	**B**	**C**	**D**	**E**
1	*Duff Depth and Moisture Regime (cm)*	1–<2 3	2–<5 Dry Zonal Wet 5 3 1	5–<10 Dry Zonal Wet 10 (6) 2	10–20 Dry Zonal Wet 12 8 4	>20 Dry Zonal Wet 15 10 5
2	*Surface Fuels Continuity (% cover)*	<20 0	20–40 2	41–60 3	61–80 (4)	>80 5
3	*Vegetation Fuel Composition*	Moss, Herbs, Irrigated Crops, Low Flammability Weeds 1	Herbs, Deciduous Shrubs (2)	Lichen, Conifer Shrubs 3	Pinegrass, Juniper 4	Sagebrush, Bunchgrass, Antelope Brush, Scotch Broom 5
4	*Fine Woody Debris Continuity (<=7cm) (% cover)*	<1 coverage 1	Scattered, <10 coverage 5	10-25 coverage (7)	>25 coverage, < 10 cm deep 10	>25 coverage, > 10 cm deep 15
5	*Large Woody Debris Continuity (>7cm) (% cover)*	<1 coverage 1	Scattered, <10 coverage 2	10-25 coverage 5	> 25 coverage, not elevated 7	>25 coverage, partially elevated (10)
6	*Live and Dead Coniferous Crown Closure (%)*	<20 2	20–40 5	41–60 (10)	61–80 15	>80 10
7	*Live Deciduous Crown Closure (%)*	>80 or <40% coniferous crown closure 0	61-80 2	41–60 3	20–40 4	<20 (5)
8	*Live and Dead Conifer Crown Base Height (m)*	5+ or <20% conifer crown closure 0	3–5 (5)	2–<3 7	1–<2 10	< 1 15
9	*Live and Dead Suppressed and Understorey Conifers (stems/ha)*	0-500 2	501-1000 5	1001-2000 10	2001-4000 20	>4000 (30)
10	*Forest Health (% of dominant and co-dominant stems)*	Standing Dead and Partly Down < 5 or <20 stems/ha 0	Standing Dead and Partly Down 5-25 5	Standing Dead and Partly Down >25-50 10	Standing Dead and Partly Down >50 - 75 20	Standing Dead and Partly Down >75 (30)
11	*Continuous Forest/Slash Cover within 2km (%)*	0-20 0	21-40 3	41-60 (5)	61-80 7	>80 10
					Sub Total	119 /155*
	Weather	**A**	**B**	**C**	**D**	**E**
12	*Biogeoclimatic Zone*	AT, Irrigated 1	CWH, CDF, MH Dry Zonal Wet 5 3 1	ICH, SBS, ESSF Dry Zonal Wet 10 (7) 3	IDF, MS, SBPS, CWH ds1 & ds2, BWBS, SWB – Dry Zonal Wet 15 10 5	PP, BG 15
13	*Historical Wildfire Occurrence (by WMB Fire Zone)*	G5, R1, R2, G6, V5, R9, V9, V3, R5, R8, V7 1	G3, G8, R3, R4, V6, G1, G9, V8 (5)	G7, C5, G4, C4, V1, C1, N6 8	K1, K5, K3, C2, C3, N5, K6, N4, K7, N2 10	N7, K4, K2, N1 , 15
					Sub Total	12/30
	Topography	**A**	**B**	**C**	**D**	**E**
14	*Aspects (>15% slope)*	North 0	East 5	<16% slope, all aspects (10)	West 12	South 15
15	*Slope (%)*	<16 (1)	16–29 and max score for North slopes 5	30–44 10	45-54 12	>55 15
16	*Terrain*	Flat (1)	Rolling 3	Sloped terrain, minor low relief draws 5	Consistent slope, deep draws or shallow gullies 7	Consistent slope, deep gullies 10
17	*Landscape/ Topographic Limitations to Wildfire Spread*	< 5 ha isolated forest land 1	North and/or east aspects dominate, wildfire spread restricted from South and/or West 2	Mountainous terrain, broken topography, regular aspect and slope changes, multiple restrictions to wildfire spread large water bodies 5	Rolling terrain, minor water bodies, minimal aspect and slope changes, minor restrictions to wildfire spread 10	Continuous, consistent topography No restriction to wildfire spread (15)
					Sub Total	27/55
	FUEL, WEATHER AND TOPOGRAPHY				**WILDFIRE BEHAVIOUR THREAT SCORE**	153 /240**
	Structural	**A**	**B**	**C**	**D**	**E**
18	*Position of Structure/ Community on Slope*	No Structures Values within 2 km 0	Bottom of slope, valley bottom 5	Mid-slope benchland, elevated valley, <16% slope (10)	Mid-slope continuous, >15% slope 12	Upper 1/3 of Slope 15
19	*Type of Development*	No Structures Values within 2 km 0	Perimeter Interface, no-inclusions 3	Perimeter Interface, with Inclusions 5	Intermix > 1 structure/ha (8)	Intermix <1 structure/ha Infrastructure 10
20	*Position of Assessment Area Relative to Values*	No Structures Values within 2 km 0	Above >500 200-500 <200 m 1 10 20	Sidehill >500 200-500 <200 m 1 12 25	Flat/Rolling >500 200-500 <200 m 1 (12) 25	Below >500 200-500 <200 m 1 15 30
					WILDLAND URBAN INTERFACE WILDFIRE THREAT SCORE	30/55
					TOTAL WILDFIRE THREAT SCORE	183 /295

*Proceed only if Fuel sub total is>29.

** Proceed to Structural component only if Wildfire Threat Behaviour Score is >95 for untreated polygons.

Wildfire Behaviour Threat Class (check applicable class)

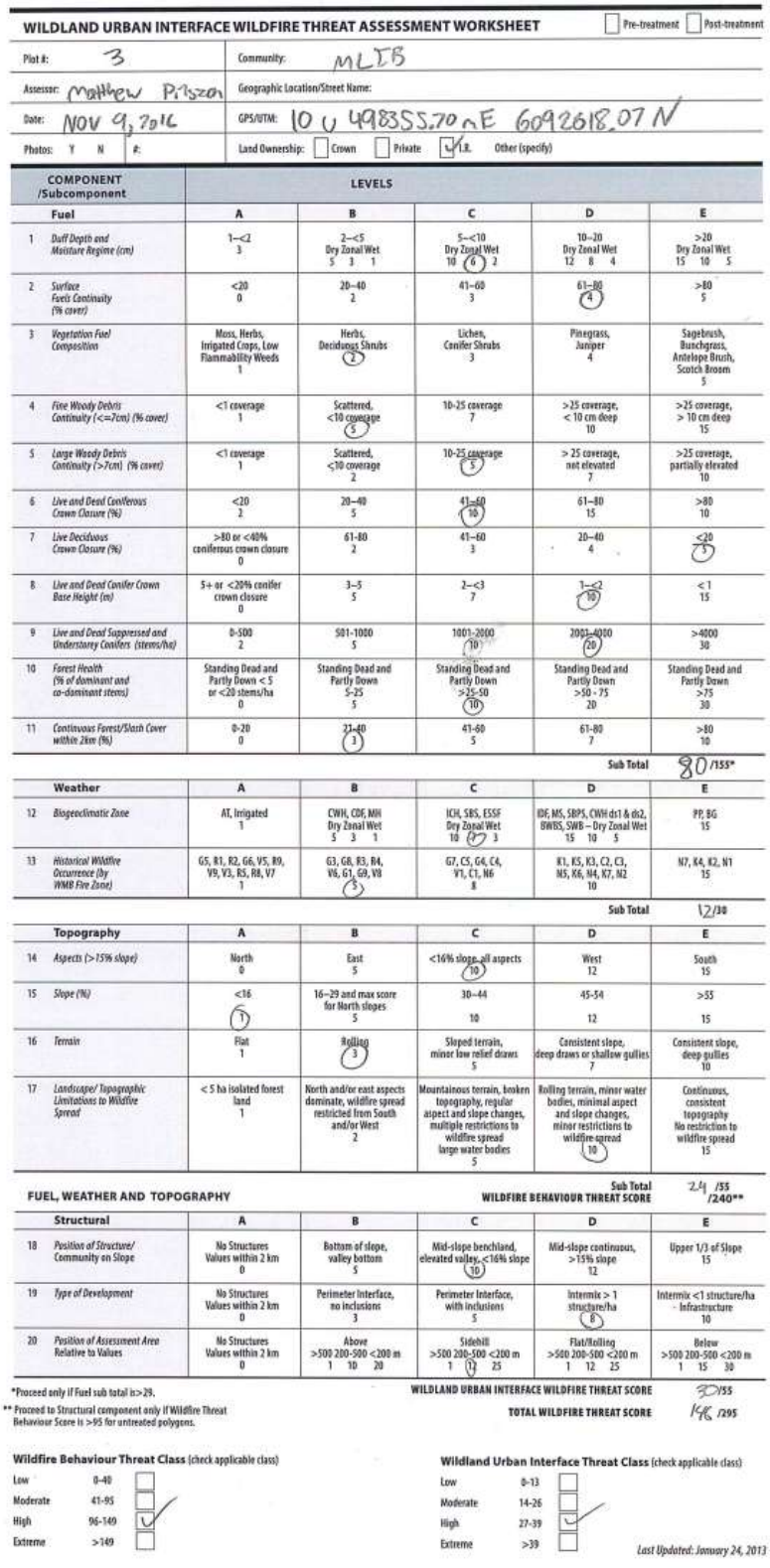
Low	0-40	☐
Moderate	41-95	☐
High	96-149	☐
Extreme	>149	☑

Wildland Urban Interface Threat Class (check applicable class)

Low	0-13	☐
Moderate	14-26	☐
High	27-39	☑
Extreme	>39	☐

Last Updated: January 24, 2013

Figure 6. Threat plot 2



WILDLAND URBAN INTERFACE WILDFIRE THREAT ASSESSMENT WORKSHEET ☐ Pre-treatment ☐ Post-treatment

Plot #: 3 | Community: MLIB

Assessor: Matthew Piszar | Geographic Location/Street Name:

Date: NOV 9, 2016 | GPS/UTM: 10 U 498355.70 mE 6092618.07 N

Photos: Y N #: | Land Ownership: ☐ Crown ☐ Private ☑ I.R. ☐ Other (specify)

COMPONENT /Subcomponent		LEVELS				
	Fuel	**A**	**B**	**C**	**D**	**E**
1	*Duff Depth and Moisture Regime (cm)*	1–<2 3	2–<5 Dry Zonal Wet 5 3 1	5–<10 Dry Zonal Wet 10 (6) 2	10–20 Dry Zonal Wet 12 8 4	>20 Dry Zonal Wet 15 10 5
2	*Surface Fuels Continuity (% cover)*	<20 0	20–40 2	41–60 3	61–80 (4)	>80 5
3	*Vegetation Fuel Composition*	Moss, Herbs, Irrigated Crops, Low Flammability Weeds 1	Herbs, Deciduous Shrubs (2)	Lichen, Conifer Shrubs 3	Pinegrass, Juniper 4	Sagebrush, Bunchgrass, Antelope Brush, Scotch Broom 5
4	*Fine Woody Debris Continuity (<=7cm) (% cover)*	<1 coverage 1	Scattered, <10 coverage (5)	10-25 coverage 7	>25 coverage, < 10 cm deep 10	>25 coverage, > 10 cm deep 15
5	*Large Woody Debris Continuity (>7cm) (% cover)*	<1 coverage 1	Scattered, <10 coverage 2	10-25 coverage (5)	> 25 coverage, not elevated 7	>25 coverage, partially elevated 10
6	*Live and Dead Coniferous Crown Closure (%)*	<20 2	20–40 5	41–60 (10)	61–80 15	>80 10
7	*Live Deciduous Crown Closure (%)*	>80 or <40% coniferous crown closure 0	61-80 2	41–60 3	20–40 4	<20 (5)
8	*Live and Dead Conifer Crown Base Height (m)*	5+ or <20% conifer crown closure 0	3–5 5	2–<3 7	1–<2 (10)	<1 15
9	*Live and Dead Suppressed and Understorey Conifers (stems/ha)*	0-500 2	501-1000 5	1001-2000 (10)	2001-4000 (20)	>4000 30
10	*Forest Health (% of dominant and co-dominant stems)*	Standing Dead and Partly Down < 5 or <20 stems/ha 0	Standing Dead and Partly Down 5-25 5	Standing Dead and Partly Down >25-50 (10)	Standing Dead and Partly Down >50 - 75 20	Standing Dead and Partly Down >75 30
11	*Continuous Forest/Slash Cover within 2km (%)*	0-20 0	21-40 (3)	41-60 5	61-80 7	>80 10
					Sub Total	80 /155*
	Weather	**A**	**B**	**C**	**D**	**E**
12	*Biogeoclimatic Zone*	AT, Irrigated 1	CWH, CDF, MH Dry Zonal Wet 5 3 1	ICH, SBS, ESSF Dry Zonal Wet 10 (7) 3	IDF, MS, SBPS, CWH ds1 & ds2, BWBS, SWB – Dry Zonal Wet 15 10 5	PP, BG 15
13	*Historical Wildfire Occurrence (by WMB Fire Zone)*	G5, R1, R2, G6, V5, R9, V9, V3, R5, R8, V7 1	G3, G8, R3, R4, V6, G1, G9, V8 (5)	G7, C5, G4, C4, V1, C1, N6 8	K1, K5, K3, C2, C3, N5, K6, N4, K7, N2 10	N7, K4, K2, N1 15
					Sub Total	12/30
	Topography	**A**	**B**	**C**	**D**	**E**
14	*Aspects (>15% slope)*	North 0	East 5	<16% slope, all aspects (10)	West 12	South 15
15	*Slope (%)*	<16 (1)	16–29 and max score for North slopes 5	30–44 10	45-54 12	>55 15
16	*Terrain*	Flat 1	Rolling (3)	Sloped terrain, minor low relief draws 5	Consistent slope, deep draws or shallow gullies 7	Consistent slope, deep gullies 10
17	*Landscape/ Topographic Limitations to Wildfire Spread*	< 5 ha isolated forest land 1	North and/or east aspects dominate, wildfire spread restricted from South and/or West 2	Mountainous terrain, broken topography, regular aspect and slope changes, multiple restrictions to wildfire spread large water bodies 5	Rolling terrain, minor water bodies, minimal aspect and slope changes, minor restrictions to wildfire spread (10)	Continuous, consistent topography No restriction to wildfire spread 15
					Sub Total	24 /55
	FUEL, WEATHER AND TOPOGRAPHY				**WILDFIRE BEHAVIOUR THREAT SCORE**	/240**
	Structural	**A**	**B**	**C**	**D**	**E**
18	*Position of Structure/ Community on Slope*	No Structures Values within 2 km 0	Bottom of slope, valley bottom 5	Mid-slope benchland, elevated valley, <16% slope (10)	Mid-slope continuous, >15% slope 12	Upper 1/3 of Slope 15
19	*Type of Development*	No Structures Values within 2 km 0	Perimeter Interface, no inclusions 3	Perimeter Interface, with inclusions 5	Intermix > 1 structure/ha (8)	Intermix <1 structure/ha - Infrastructure 10
20	*Position of Assessment Area Relative to Values*	No Structures Values within 2 km 0	Above >500 200-500 <200 m 1 10 20	Sidehill >500 200-500 <200 m 1 (12) 25	Flat/Rolling >500 200-500 <200 m 1 12 25	Below >500 200-500 <200 m 1 15 30
					WILDLAND URBAN INTERFACE WILDFIRE THREAT SCORE	30/55
					TOTAL WILDFIRE THREAT SCORE	174 /295

*Proceed only if Fuel sub total is>29.

** Proceed to Structural component only if Wildfire Threat Behaviour Score is >95 for untreated polygons.

Wildfire Behaviour Threat Class (check applicable class)

Low	0-40	☐
Moderate	41-95	☐
High	96-149	☑
Extreme	>149	☐

Wildland Urban Interface Threat Class (check applicable class)

Low	0-13	☐
Moderate	14-26	☐
High	27-39	☑
Extreme	>39	☐

Last Updated: January 24, 2013

Figure 7. Threat plot 3

Appendix B: Historical Wildfire Data

Table 9. Historical wildfires that have occured within a 20km radius of MLIB

FIRE YEAR	FIRE NUMBER	GEOGRAPHIC LOCATION	LATITUDE	LONGITUDE	CAUSE	SIZE	LAND STATUS	FUEL TYPE
2015	G60084	Trapper Mainline	55 08.282 N	122 56.127 W	Lightning	0.40	Vacant	C-2
2015	G60234	5km SE of Tudyah Lake	55 03.135 N	122 57.697 W	Lightning	0.10	Other	C-3
2015	G60307	S of Hwy 39, 2km from Hwy 97 junction	55 08.489 N	122 59.335 W	Lightning	0.01	Vacant	
2014	G10071	McLeod Lake	54 58.027 N	123 00.435 W	Undetermined	0.01	Highways	
2014	G10210	5 miles E of Macleod Lake	55 00.249 N	122 58.380 W	Lightning	2.00	Vacant	C-3
2014	G60008	7.5km Finlay FSR	55 07.451 N	123 05.275 W	Non-categorized	0.01	Vacant	C-3
2014	G60242	Windy Point	55 06.045 N	122 58.672 W	Non-categorized	0.50	Timber Sale Licence	S-2
2014	G60511	Windy Point, Hwy 97	55 06.275 N	122 58.256 W	Arson	0.40	Timber Sale Licence	S-2
2014	G60549	E side of Hwy 39/97 Junction	55 07.946 N	122 57.842 W		0.10		
2013	G10331	McLeod Lake	54 58.428 N	123 00.852 W	Lightning	0.01	Vacant	
2013	G60393	MacKenzie	55 07.494 N	123 07.066 W	Campfire, abandoned	0.24	Vacant	
2013	G60474	McIntyre lake	55 02.913 N	123 05.032 W	Open burning, non-compliance, category 2	0.00	Treaty Settlement Land	
2012	G60196	Windy Point Lake	55 06.882 N	123 00.092 W	Lightning	2.70	Other	
2010	G60390	5 miles west of Tudyah Lake	55 05.118 N	123 13.522 W	Lightning	0.01	Vacant	
2010	G60577	10km on the Finley FSR	55 07.205 N	123 06.844 W	Open burning, non-compliance, category 1	0.01	Vacant	O-1a
2009	G10342	South Side of McLeod Lake	54 48.255 N	122 54.184 W	Lightning	0.25	Vacant	C-1
2009	G10359	5nm NE Hammettt Lk	54 47.412 N	123 01.093 W	Lightning	0.20	Vacant	
2009	G10394	Adj Whiskers park rec site	54 54.766 N	122 57.957 W	Lightning	0.01	Vacant	
2009	G10408	East of McLeod Lake	54 54.401 N	122 51.638 W	Lightning	0.01	Vacant	C-2
2009	G10409	Hodda Lake	54 52.466 N	122 49.422 W	Lightning	0.01	Vacant	S-2
2009	G10474	S of McLead Lake	54 48.629 N	122 50.478 W	Powerline short-circuit	0.01	Vacant	
2009	G10523	North Side of Weedon Creek 2.5 - 3 km	54 46.639 N	122 55.735 W	Lightning	0.14	Vacant	C-3
2009	G60085	Hwy 97 and Hwy 39 Junction	55 07.232 N	122 57.513 W	Open burning, non-compliance, category 1	0.50	Forest Licence	S-1
2009	G60333	South of Philips Mainline	55 08.359 N	123 09.310 W	Lightning	0.01	Vacant	C-2
2009	G60334	South of Philips Mainline	55 07.770 N	123 09.289 W	Lightning	0.01	Vacant	C-5
2009	G60338	West of McLeod Lake	55 01.612 N	123 10.883 W	Lightning	0.01	Vacant	C-3
2009	G60457	Backside of Tudyah	55 04.146 N	123 06.838 W	Lightning	0.01	Vacant	
2008	G10339	Mcleod Lake	54 48.416 N	123 02.950 W	Arson	0.30	Indian Reserve	C-2
2008	G60059	2KM south of Mcleod Lake.	54 58.114 N	123 00.538 W	Powerline short-circuit	0.01	Vacant	
2008	G60119	3 km on Sabai Mainline	55 05.515 N	123 06.405 W	Welding, grinding, cutting operations	0.01	Licence to Cut	S-1
2007	G10119	NE of Carp Lake	54 47.310 N	123 07.028 W	Spontaneous combustion	0.01	Vacant	C-3
2007	G10132	Carp Lake	54 49.278 N	123 12.310 W	Lightning	1.50	Vacant	C-6

FIRE YEAR	FIRE NUMBER	GEOGRAPHIC LOCATION	LATITUDE	LONGITUDE	CAUSE	SIZE	LAND STATUS	FUEL TYPE
2007	G10293	McLeod Lake	54 55.845 N	123 00.940 W	Lightning	0.01	Vacant	
2007	G60058	1km West Tudyah lake forestery rec site	55 06.525 N	123 01.908 W	Campfire, abandoned	0.01	Vacant	C-3
2007	G60303	0.5 Km South Tudyah Lake	55 03.672 N	123 01.542 W	Lightning	0.01	Vacant	C-5
2006	G10809	Weedon	54 47.679 N	123 05.020 W	Open burning, non-compliance, category 3	50.00	Indian Reserve	
2004	G60259	Pack River	54 56.553 N	123 10.974 W	Lightning	0.01	Vacant	C-3
2003	G10184	3 km South of McLeod Lake Community	54 55.000 N	123 00.400 W	Lightning	0.01	Highways	
2003	G60181	Whiskey Creek	55 10.046 N	123 01.652 W	Burning equipment (burning vehicle)	0.01	Timber Sale Licence	
2003	G60234	Pack River	55 07.280 N	123 06.800 W	Campfire, abandoned	0.01	Vacant	
2003	G60341	10km West of Parsnip River Bridge	55 08.140 N	123 00.750 W	Lightning	0.20	Vacant	
2002	G60277	Tudya Lake	55 04.000 N	123 02.000 W	Powerline short-circuit	0.01	Hydro	
2000	G10078	North Weedon	54 46.120 N	123 05.250 W	Open burning, non-compliance, category 8	15.00	Forest Licence	
1999	G10173	Mcleod Lake, 1 km south of Whisker's Bay Resort	54 49.360 N	122 51.400 W	Powerline short-circuit	0.10	Hydro	
1999	G10265	Carp lake	54 48.060 N	123 14.450 W	Undetermined	0.30	Vacant	
1999	G60123	Parsnip River	55 04.430 N	122 48.550 W	Arson	11.00	Forest Licence	
1999	G60125	Parsnip	55 04.030 N	122 48.960 W	Lightning	1.50	Vacant	
1998	G10287		54 54.000 N	122 58.000 W	Lightning	2.00	Vacant	
1998	G10288	Iroquois Lake	54 53.000 N	123 05.000 W	Lightning	0.01	Vacant	
1998	G60032	Tudyah Lake	55 04.000 N	123 01.000 W	Powerline short-circuit	0.00	Hydro	O-1a
1998	G60360	Carp Lake	54 53.000 N	123 22.000 W	Lightning	0.01	Vacant	
1995	G10104		54 55.920 N	123 00.900 W	Arson	0.10	Vacant	
1994	G10098		54 48.000 N	122 58.980 W	Undetermined	0.10	Forest Licence	
1994	G10110		54 51.000 N	123 00.000 W	Lightning	0.10	Other	
1993	G10018		54 55.740 N	123 01.380 W	Lightning	0.00	Forest Licence	
1992	G10045		54 57.840 N	123 05.100 W	Lightning	0.00	Vacant	
1992	G10059		54 54.120 N	123 16.260 W	Lightning	0.00	Forest Licence	
1992	G10130		54 47.700 N	123 09.000 W	Lightning	0.10	Forest Licence	
1992	G60041		55 02.160 N	123 04.920 W	Undetermined	60.00	Forest Licence	
1992	G90025		54 54.120 N	122 49.740 W	Open burning	12.00	Other	
1991	G10079		54 55.200 N	122 58.140 W	Campfire escape	0.00	Vacant	
1991	G10083		54 52.500 N	122 58.140 W	Arson	0.00	Vacant	
1990	G10001		54 57.840 N	122 42.360 W	Open burning	5.00	Occupied	
1990	G10047		54 56.760 N	122 45.120 W	Lightning	0.10	Vacant	
1990	G10101		54 58.380 N	122 57.240 W	Lightning	0.50	Vacant	
1990	G10102		54 59.460 N	123 00.420 W	Lightning	0.10	Vacant	
1990	G10107		55 01.080 N	122 43.200 W	Lightning	0.20	Vacant	
1990	G10157		54 54.660 N	122 43.260 W	Lightning	0.00	Vacant	
1990	G10160		54 55.200 N	122 42.300 W	Lightning	0.10	Vacant	

FIRE YEAR	FIRE NUMBER	GEOGRAPHIC LOCATION	LATITUDE	LONGITUDE	CAUSE	SIZE	LAND STATUS	FUEL TYPE
1990	G10210		54 48.240 N	122 56.280 W	Open burning	0.50	Forest Licence	
1990	G60016		55 08.580 N	123 02.820 W	Lightning	0.00	Vacant	
1989	G10050		54 53.580 N	122 58.140 W	Lightning	0.10	Vacant	
1989	G10052		54 53.580 N	122 58.140 W	Lightning	0.20	Vacant	
1989	G10056		54 53.580 N	122 46.020 W	Lightning	0.10	Vacant	
1989	G10057		54 48.240 N	122 55.380 W	Lightning	0.10	Vacant	
1989	G10058		54 55.740 N	122 44.220 W	Lightning	0.00	Vacant	
1989	G10096		54 51.960 N	123 17.160 W	Lightning	0.00	Vacant	
1989	G10108		54 57.300 N	122 46.020 W	Lightning	0.00	Vacant	
1989	G10146		54 56.760 N	123 00.420 W	Lightning	0.00	Vacant	
1989	G10188		54 51.960 N	122 44.160 W	Undetermined	0.10	Occupied	
1989	G10211		54 59.460 N	123 19.980 W	Lightning	0.00	Other	
1989	G10215		55 02.160 N	122 44.160 W	Lightning	0.00	Vacant	
1989	G10253		54 48.240 N	123 13.680 W	Open burning	3.00	Forest Licence	
1989	G60015		55 03.780 N	123 03.060 W	Lightning	0.00	Vacant	
1988	R10008		55 00.540 N	122 58.140 W	Lightning	0.10	Vacant	
1988	G10019		54 53.580 N	122 57.240 W	Discarded match/cigarette/smoking substance	0.00	Forest Licence	
1988	G10028		54 48.240 N	123 02.520 W	Open burning	0.40	Forest Licence	
1988	G60003		55 09.120 N	122 58.140 W	Spontaneous combustion	0.10	Vacant	
1988	G60009		55 01.620 N	122 53.460 W	Open burning	1.00	Forest Licence	
1987	G10033		54 48.780 N	123 02.520 W	Lightning	25.00	Vacant	
1987	G10051		54 51.960 N	122 44.160 W	Lightning	0.00	Vacant	
1987	G10076		54 49.260 N	122 56.340 W	Undetermined	1.00	Occupied	
1987	G10085		54 48.240 N	123 00.660 W	Open burning	1.00	Forest Licence	
1987	G60009		55 06.420 N	122 58.140 W	Burning building	0.10	Occupied	
1986	G10015		54 55.620 N	122 59.580 W	Lightning	0.10	Vacant	
1986	G10022		54 56.460 N	122 58.860 W	Campfire escape	0.10	Occupied	
1986	G60004		55 05.400 N	122 58.020 W	Discarded match/cigarette/smoking substance	0.10	Vacant	
1985	G10001		54 56.460 N	122 58.080 W	Discarded match/cigarette/smoking substance	0.10	Highways	
1985	G10023		54 46.680 N	123 10.020 W	Lightning	0.10	Vacant	
1985	G10075		54 56.880 N	122 58.080 W	Powerline short-circuit	0.10	Vacant	
1985	G60013		55 00.600 N	122 51.000 W	Lightning	0.10	Vacant	
1985	G60027		55 07.980 N	123 01.380 W	Undetermined	0.10	Forest Licence	
1985	G60031		54 57.780 N	123 15.180 W	Lightning	0.50	Vacant	
1985	G60032		55 07.140 N	123 06.000 W	Discarded match/cigarette/smoking substance	0.10	Vacant	
1985	G60042		54 56.880 N	123 22.020 W	Lightning	0.30	Vacant	
1984	G10016		55 01.680 N	123 01.680 W	Open burning	0.20	Vacant	

FIRE YEAR	FIRE NUMBER	GEOGRAPHIC LOCATION	LATITUDE	LONGITUDE	CAUSE	SIZE	LAND STATUS	FUEL TYPE
1984	G10053		54 53.880 N	122 56.580 W	Lightning	0.10	Vacant	
1984	G60006		55 05.820 N	122 59.580 W	Discarded match/cigarette/smoking substance	0.10	Vacant	
1983	G10006		54 56.040 N	122 57.300 W	Undetermined	0.10	Forest Licence	
1982	G10025		54 49.980 N	122 52.020 W	Undetermined	0.10	Vacant	
1982	G10039		54 51.240 N	122 52.020 W	Lightning	0.20	Vacant	
1982	G10055		54 55.620 N	122 55.020 W	Lightning	0.10	Vacant	
1982	G60009		55 04.500 N	123 07.560 W	Lightning	0.10	Vacant	
1981	G10011		54 58.620 N	123 00.900 W	Lightning	0.10	Vacant	
1981	G10018		54 56.880 N	122 58.860 W	Discarded match/cigarette/smoking substance	0.10	Vacant	
1981	G10019		54 57.780 N	122 59.580 W	Discarded match/cigarette/smoking substance	0.10	Vacant	
1981	G10033		54 53.880 N	122 58.080 W	Lightning	0.10	Vacant	
1981	G10043		54 49.500 N	123 11.580 W	Lightning	0.10	Vacant	
1981	G10060		54 49.080 N	123 15.180 W	Lightning	0.10	Vacant	
1981	G10089		54 57.300 N	122 56.580 W	Open burning	8.00	Forest Licence	
1981	G10096		54 55.620 N	122 48.180 W	Open burning	3.00	Forest Licence	
1981	G10097		54 52.980 N	122 52.740 W	Open burning	31.40	Forest Licence	
1981	G10098		54 53.880 N	122 52.020 W	Open burning	6.40	Forest Licence	
1981	G10099		54 54.300 N	122 48.180 W	Open burning	40.00	Forest Licence	
1981	G10104		54 54.300 N	122 49.740 W	Open burning	3.00	Forest Licence	
1981	G60053		55 06.660 N	123 04.500 W	Open burning	0.20	Forest Licence	
1980	G10006		54 59.940 N	123 02.460 W	Arson	1.00	Provincial	
1980	G10016		54 54.720 N	122 55.800 W	Discarded match/cigarette/smoking substance	90.00	Forest Licence	
1980	G10021		54 49.080 N	122 50.460 W	Lightning	0.10	Vacant	
1980	G60001		55 07.140 N	122 54.900 W	Arson	0.80	Highways	
1980	G60007		55 00.600 N	123 01.380 W	Open burning	0.10	Other	
1980	G60014		54 55.140 N	123 10.800 W	Burning building	0.10	Highways	
1980	G60018		54 57.300 N	122 59.580 W	Spontaneous combustion	0.10	Occupied	
1979	GC0017		54 55.620 N	123 18.180 W	Lightning	0.10	Vacant	
1979	GJ0003		55 07.140 N	122 55.680 W	Discarded match/cigarette/smoking substance	0.10	Occupied	
1979	GJ0008		55 05.820 N	123 03.720 W	Lightning	0.10	Vacant	
1978	GC0001		54 46.080 N	122 59.580 W	Open burning	0.10	Forest Licence	
1978	GC0011		54 52.560 N	122 58.080 W	Lightning	0.50	Vacant	
1978	GC0014		55 00.600 N	123 09.900 W	Lightning	0.10	Vacant	
1978	GC0017		54 52.980 N	123 15.180 W	Lightning	0.10	Vacant	
1978	GJ0002		55 09.300 N	122 58.800 W	Arson	0.20	Highways	
1978	GJ0003		55 09.720 N	123 00.600 W	Arson	0.10	Highways	
1978	GJ0022		55 08.880 N	123 06.780 W	Lightning	0.10	Vacant	

FIRE YEAR	FIRE NUMBER	GEOGRAPHIC LOCATION	LATITUDE	LONGITUDE	CAUSE	SIZE	LAND STATUS	FUEL TYPE
1978	GJ0033		54 55.140 N	122 57.300 W	Undetermined	0.10	Occupied	
1975	GC0032		54 56.040 N	122 58.080 W	Powerline short-circuit	0.10	Highways	
1975	GC0101		55 08.880 N	122 52.560 W	Arson	6.80	Forest Licence	
1974	GC0075		55 07.560 N	122 58.020 W	Arson	0.10	Vacant	
1974	GC0076		55 07.560 N	122 58.020 W	Arson	0.10	Vacant	
1974	GC0212		55 07.140 N	122 56.460 W	Campfire escape	0.10	Vacant	
1974	GC0248		54 53.400 N	122 43.860 W	Open burning	2.00	Forest Licence	
1973	GC0084		54 57.300 N	122 44.580 W	Arson	44.50	Forest Licence	
1973	GC0091		55 10.140 N	123 00.600 W	Campfire escape	0.80	Vacant	
1973	GC0134		54 48.660 N	123 12.300 W	Discarded match/cigarette/smoking substance	0.10	Forest Licence	
1973	GC0176		55 06.240 N	122 58.800 W	Arson	0.10	Vacant	
1973	GC0186		55 06.660 N	122 59.580 W	Lightning	0.20	Vacant	
1973	GC0188		55 10.140 N	123 01.380 W	Campfire escape	0.10	Vacant	
1973	GC0211		54 52.140 N	122 53.520 W	Burning building	0.10	Vacant	
1968	G00190		55 00.600 N	123 01.380 W	Open burning	0.10	Vacant	
1966	G00071		55 00.600 N	123 01.380 W	Undetermined	0.10	Vacant	
1966	G00083		55 05.820 N	123 01.380 W	Campfire escape	0.10	Vacant	
1966	G00183		54 54.300 N	122 49.740 W	Lightning	0.10	Forest Licence	
1966	G00237		54 52.560 N	123 16.680 W	Campfire escape	0.10	Other	
1965	G00034		55 00.600 N	123 01.380 W	Open burning	0.20	Forest Licence	
1965	G00273		54 59.520 N	123 01.680 W	Campfire escape	0.10	Forest Licence	
1965	G00302		54 59.520 N	123 01.680 W	Discarded match/cigarette/smoking substance	0.10	Provincial	
1965	G00308		55 05.820 N	122 49.500 W	Lightning	0.10	Forest Licence	
1965	G00344		55 02.340 N	123 01.380 W	Lightning	0.10	Forest Licence	
1963	G00149		55 04.080 N	122 52.560 W	Lightning	0.10	Forest Licence	
1963	G00180		54 50.820 N	123 16.680 W	Mill burner	0.10	Forest Licence	
1963	G00182		55 04.080 N	122 52.560 W	Lightning	0.10	Forest Licence	
1963	G00193		55 05.820 N	122 58.800 W	Lightning	0.10	Forest Licence	
1963	G00216		54 56.040 N	122 55.800 W	Lightning	0.10	Forest Licence	
1962	G00106		54 59.520 N	123 01.680 W	Campfire escape	0.10	Vacant	
1961	G00050		55 07.560 N	122 58.800 W	Spontaneous combustion	0.10	Forest Licence	
1961	G00273		55 02.340 N	123 01.380 W	Arson	0.10	Vacant	
1961	G00289		55 02.340 N	123 01.380 W	Campfire escape	0.10	Vacant	
1961	G00392		55 07.560 N	122 58.800 W	Discarded match/cigarette/smoking substance	1.50	Vacant	
1961	G00447		55 07.560 N	122 52.560 W	Discarded match/cigarette/smoking substance	0.10	Vacant	
1961	G00458		55 05.820 N	123 01.380 W	Discarded match/cigarette/smoking substance	1.50	Tree Farm Licence	
1961	G00497		55 07.560 N	122 58.800 W	Campfire escape	0.10	Forest Licence	

FIRE YEAR	FIRE NUMBER	GEOGRAPHIC LOCATION	LATITUDE	LONGITUDE	CAUSE	SIZE	LAND STATUS	FUEL TYPE
1960	G00065		55 05.820 N	123 01.380 W	Mill burner	0.20	Forest Licence	
1960	G00081		55 02.340 N	122 58.260 W	Discarded match/cigarette/smoking substance	0.10	Vacant	
1960	G00296		54 49.080 N	122 52.740 W	Lightning	0.20	Forest Licence	
1960	G00315		54 54.300 N	122 55.800 W	Campfire escape	0.10	Forest Licence	
1959	G00167		54 59.520 N	122 52.740 W	Spontaneous combustion	1.20	Unknown	
1958	G00043		55 09.300 N	123 01.380 W	Undetermined	0.40	Forest Licence	
1958	G00090		54 56.040 N	122 43.860 W	Campfire escape	30.30	Vacant	
1958	G00158		55 02.340 N	123 01.380 W	Undetermined	0.10	Vacant	
1958	G00159		54 59.520 N	122 58.620 W	Campfire escape	0.10	Vacant	
1958	G00207		55 07.560 N	123 07.560 W	Discarded match/cigarette/smoking substance	0.40	Vacant	
1958	G00392		55 05.820 N	122 58.800 W	Discarded match/cigarette/smoking substance	167.10	Vacant	
1958	G00426		54 59.520 N	123 19.740 W	Lightning	0.10	Vacant	
1957	G00004		54 56.040 N	122 58.860 W	Campfire escape	0.10	Vacant	
1957	G00049		54 54.300 N	122 55.800 W	Undetermined	0.10	BCR (Line ownership)	
1957	G00076		54 56.040 N	122 58.860 W	Campfire escape	0.10	Vacant	
1957	G00106		54 57.780 N	122 58.860 W	Lightning	0.10	Vacant	
1957	G00119		54 57.780 N	122 43.860 W	Campfire escape	0.10	Vacant	
1957	G00153		54 57.780 N	122 58.860 W	Campfire escape	0.10	Vacant	
1956	G00120		54 59.520 N	123 01.680 W	Campfire escape	0.80	Indian Reserve	
1956	G00121		54 50.820 N	123 10.800 W	Campfire escape	14.10	Vacant	
1956	G00205		55 04.080 N	122 46.380 W	Open burning	0.40	BCR (Line ownership)	
1956	G00206		55 05.820 N	122 58.800 W	Campfire escape	0.10	Vacant	
1956	G00252		54 56.040 N	122 58.860 W	Campfire escape	0.10	Vacant	
1955	G00078		55 07.560 N	123 07.560 W	Lightning	0.10	Vacant	
1955	G00105		54 54.300 N	123 10.800 W	Campfire escape	2.00	Vacant	
1955	G00156		54 52.560 N	122 55.800 W	Campfire escape	0.10	Vacant	
1954	G00075		55 05.820 N	122 58.800 W	Lightning	0.10	Vacant	
1953	G00097		55 09.300 N	122 58.800 W	Campfire escape	0.10	Vacant	
1953	G00099		54 54.300 N	123 13.860 W	Undetermined	0.10	Vacant	
1953	G00111		54 47.340 N	122 52.740 W	Lightning	0.10	Vacant	
1952	G00131		54 59.520 N	123 01.680 W	Campfire escape	0.10	Vacant	
1951	G00147		55 07.560 N	122 55.680 W	Campfire escape	0.10	Vacant	
1950	G00092		54 56.040 N	122 43.860 W	Lightning	0.80	Vacant	

Appendix C: PSTA Mapping Data

Table 10. Fuel types occurring within the 2km CWPP assessment area

Fuel Type	Definition	Area (ha)
C-2	Boreal spruce	330.4
C-3	Mature jack or lodgepole pine	1618.7
C-7	Ponderosa pine – Douglas fir	153.4
D-1/2	Leafless or green aspen	426.1
S-1	Jack or lodgepole pine slash	47.4
S-2	White spruce – balsam slash	44.6
M-1/2	Boreal mixedwood leafless or green	1381.1
O-1a/b	Grass	943.6
Non-fuel		9.9
Water		840.3

Table 11. Area of Public Threat Rating occurring within the 2km CWPP assessment area

Threat Class	Description	Area (ha)
-1	No Threat	845.2
2	Low	10.5
3	Low	872.1
4	Moderate	344.4
5	Moderate	604.6
6	Moderate	573.7
7	High	2136.9
8	High	408.3

Table 12. Area of spotting impact by spotting class within the CWPP 2km assessment area

Spotting Class	Description	Area (ha)
1	Low	183.1
2	Low	347.5
3	Low	680.3
4	Moderate	968.2
5	Moderate	999.8
6	Moderate	1063.1
7	High	1125.8
8	High	428.0

Table 13. Area of historical fire density within the CWPP 2km assessment area

Fire Frequency Class	Description	Area (ha)
0	<1	123.5
1	1 - 5	5672.0
2	5.1 - 10	0.1

Table 14. Area of head fire intensity (HFI) by HFI class within the CWPP 2km assessment area

HFI Class	Range	Area (ha)
0	648.19 kW/m (Non-Fuel)	828.2
1	648.19 to 1000 kW/m	932.6
2	>1000 to 2000 kW/m	311.5
3	>2000 to 4000 kW/m	647.5
4	>4000 to 6000 kW/m	653.0
5	>6000 to 10000 kW/m	2406.9
6	>10000 to 18000 kW/m	15.8

Appendix D: CWPP Overview Map

McLeod Lake Indian Band (IR1)

Community Wildfire Protection Plan

Overview

GEOTERRA
INTEGRATED RESOURCE SYSTEMS

Scale:
1:35,000

Coordinate System: NAD 1983 BC Environment Albers
Projection: Albers
Datum: North American 1983
False Easting: 1,000,000.0000
False Northing: 0.0000
Central Meridian: -126.0000
Standard Parallel 1: 50.0000
Standard Parallel 2: 58.5000
Latitude Of Origin: 45.0000
Units: Meter

Date: 2017-01-17

Legend

- McLeod Lake IR1
- Wildland Urban Interface - 2 Km
- Structures
- McLeod Lake IR1 2km buffer
- Transportation ROW

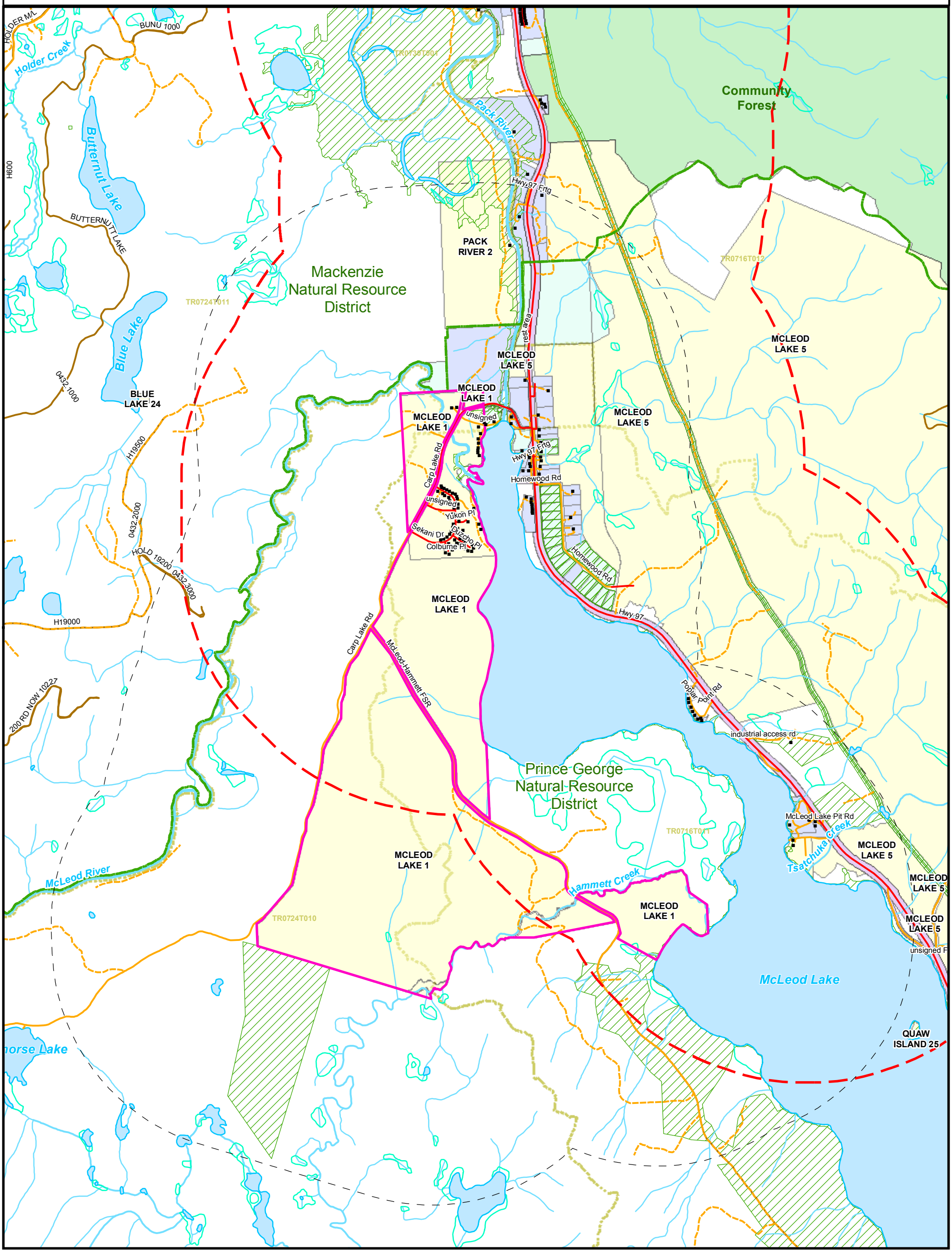
Ownership Class

- Crown Federal
- Crown Municipal
- Crown Provincial
- Private

- Community Forest
- Crown Tenures
- Natural Resource Districts
- Trapline Areas
- Paved Roads

- Loose Roads
- Rough Roads
- Forest Tenure Roads
- Lakes
- Wetlands

- Headwater Streams
- Streams and creeks
- Rivers



Appendix E: Mountain Pine Beetle Affected Areas Map

McLeod Lake Indian Band (IR1)

Provincial Strategic Threat Analysis

Fuel Types (MPB)

GEOTERRA
INTEGRATED RESOURCE SYSTEMS

Scale:
1:35,000

Coordinate System: NAD 1983 BC Environment Albers
Projection: Albers
Datum: North American 1983
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False Northing: 0.0000
Central Meridian: -126.0000
Standard Parallel 1: 50.0000
Standard Parallel 2: 58.5000
Latitude Of Origin: 45.0000
Units: Meter

Date: 2017-01-16

Legend

- McLeod Lake IR1
- Wildland Urban Interface - 2 Km
- Structures
- McLeod Lake IR1 2km buffer
- Natural Resource Districts
- Biogeoclimatic Zones
- Results Openings
- McLeod Lake IR1 Cutblock
- MPB% of Pine
- Paved Roads
- Loose Roads
- Rough Roads
- Forest Tenure Roads
- Lakes
- Wetlands
- Headwater Streams
- Streams and creeks
- Rivers

MPB Polygons

MPB % Range	Area (Ha)
Unknown (Null)	117.320
0-20	345.133
21-40	151.568
41-60	111.469
61-80	192.436
81-100	1436.592
Total	2354.518

Appendix F: Wildfire Threat Map

McLeod Lake Indian Band (IR1)

Community Wildfire Protection Plan

Wildfire Threat

GEOTERRA
INTEGRATED RESOURCE SYSTEMS

Scale:
1:35,000

Coordinate System: NAD 1983 BC Environment Albers
Projection: Albers
Datum: North American 1983
False Easting: 1,000,000.0000
False Northing: 0.0000
Central Meridian: -126.0000
Standard Parallel 1: 50.0000
Standard Parallel 2: 58.5000
Latitude Of Origin: 45.0000
Units: Meter

Date: 2017-01-16

Legend

- McLeod Lake IR1
- Wildland Urban Interface - 2 Km
- Natural Resource Districts
- Biogeoclimatic Zones

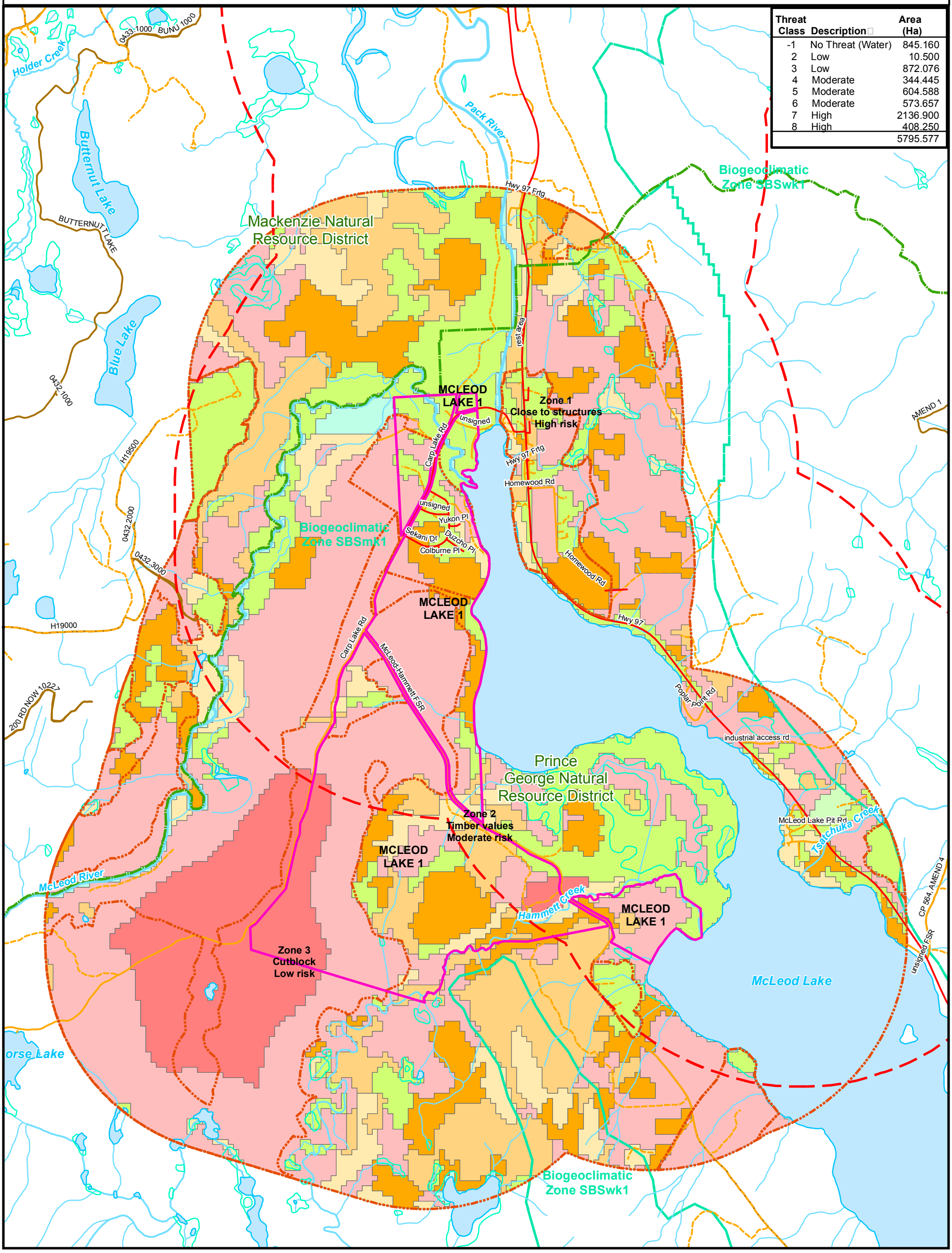
FIRE THREAT CLASS

- -1-No Threat (Water)
- 2-Low
- 3-Low
- 4-Moderate
- 5-Moderate
- 6-Moderate
- 7-High
- 8-High

- Paved Roads
- Loose Roads
- Rough Roads
- Forest Tenure Roads

- Lakes
- Wetlands
- Headwater Streams
- Streams and creeks
- Rivers

Threat Class	Description	Area (Ha)
-1	No Threat (Water)	845.160
2	Low	10.500
3	Low	872.076
4	Moderate	344.445
5	Moderate	604.588
6	Moderate	573.657
7	High	2136.900
8	High	408.250
		5795.577



Appendix G: VRI Data Map

GEOTERRA
INTEGRATED RESOURCE SYSTEMS

McLeod Lake Indian Band (IR1)

Provincial Strategic Threat Analysis

VRI

Scale:
1:35,000

Coordinate System: NAD 1983 BC Environment Albers
Projection: Albers
Datum: North American 1983
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False Northing: 0.0000
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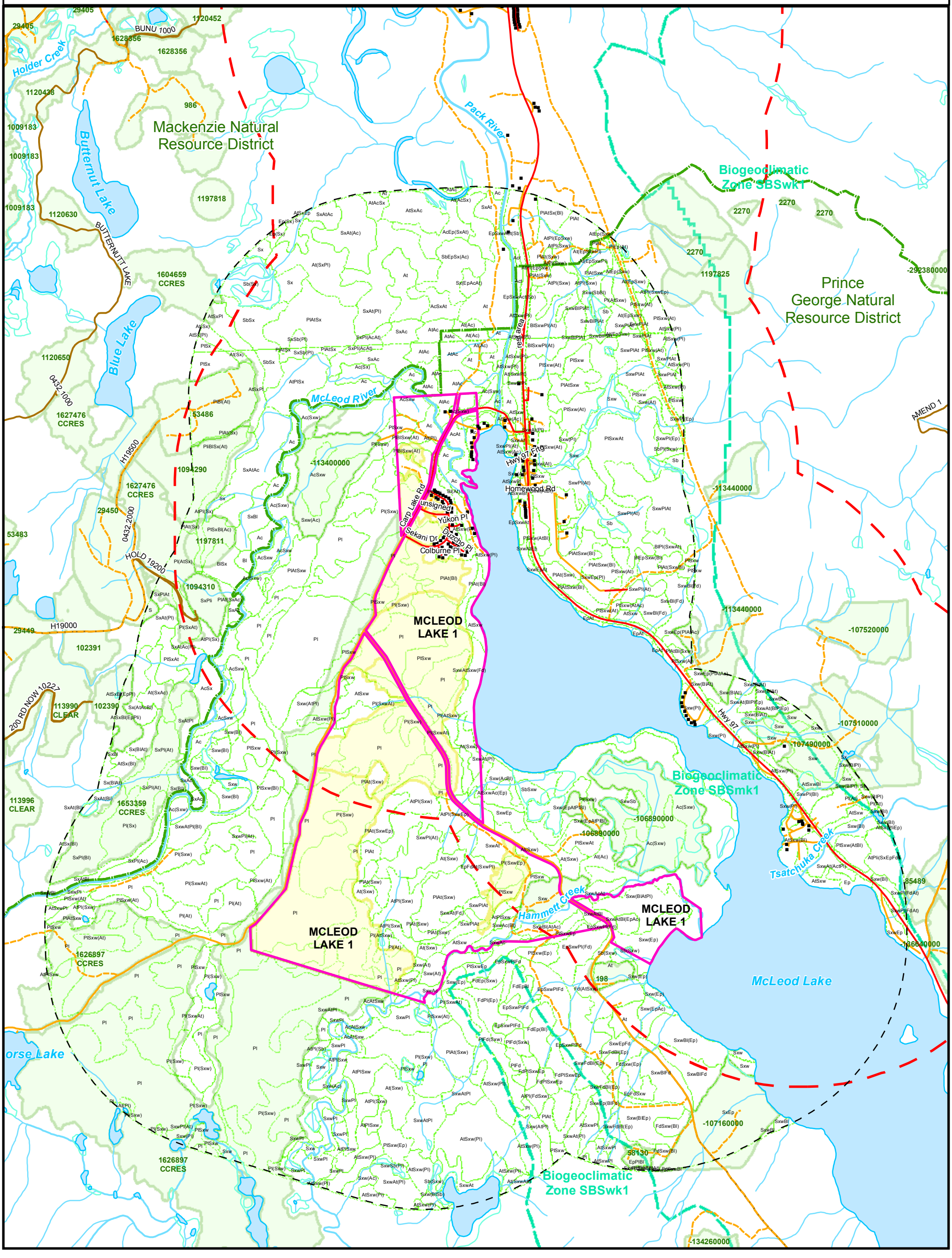
Standard Parallel 1: 50.0000
Standard Parallel 2: 58.5000
Latitude Of Origin: 45.0000
Units: Meter

Date: 2017-01-17

Legend

- McLeod Lake IR1
- Wildland Urban Interface - 2 Km
- Structures
- VRI
- McLeod Lake IR1 2km buffer
- Natural Resource Districts
- Biogeoclimatic Zones
- Results Openings
- McLeod Lake IR1 Cutblock
- Paved Roads
- Loose Roads
- Rough Roads
- Forest Tenure Roads
- Lakes
- Streams
- Streams and creeks
- Rivers
- Wetlands



Appendix H: Fire History Critical Infrastructure Map

McLeod Lake Indian Band (IR1)

Provincial Strategic Threat Analysis

Fire History Critical Infrastructure

GEOTERRA
INTEGRATED RESOURCE SYSTEMS

Scale:
1:35,000

Coordinate System: NAD 1983 BC Environment Albers
Projection: Albers
Datum: North American 1983
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False Northing: 0.0000
Central Meridian: -126.0000
Standard Parallel 1: 50.0000
Standard Parallel 2: 58.5000
Latitude Of Origin: 45.0000
Units: Meter

Date: 2017-01-17

Legend

- McLeod Lake IR1
- Wildland Urban Interface - 2 Km
- Natural Resource Districts
- Historical_Fire_Polys
- Historical_Fire_Points

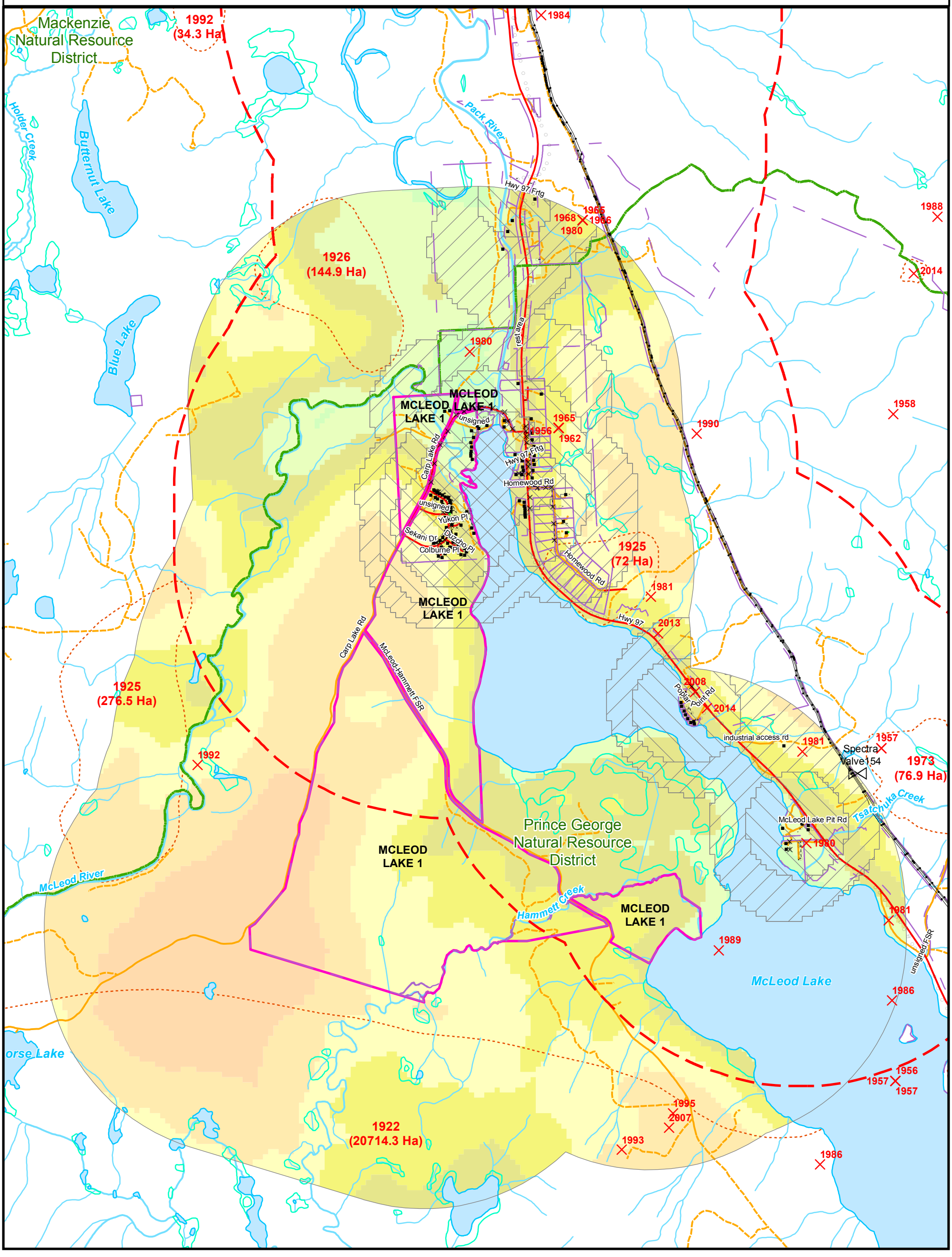
Spotting Impact Class

- 1-Low
- 2-Low
- 3-Low
- 4-Moderate
- 5-Moderate
- 6-Moderate
- 7-High
- 8-High
- Structures

Density Class

- 1: 0.01 - 5.99/km2
- 2: 6 - 24.99/km2
- 3: 25 - 99.99/km2
- No Known Structures

- Pole
- Street Light
- OH Secondary
- UG Secondary
- Spectra Pipeline
- Spectra Valve Site
- Paved Roads
- Loose Roads
- Rough Roads
- Lakes
- Wetlands
- Headwater Streams
- Streams and creeks
- Rivers



Appendix I: Fuel Type Map

McLeod Lake Indian Band (IR1)

Community Wildfire Protection Plan

Fuel Types

GEOTERRA
INTEGRATED RESOURCE SYSTEMS

Scale:
1:35,000

Coordinate System: NAD 1983 BC Environment Albers
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False Northing: 0.0000
Central Meridian: -126.0000
Standard Parallel 1: 50.0000
Standard Parallel 2: 58.5000
Latitude Of Origin: 45.0000
Units: Meter

Date: 2017-01-16

Legend

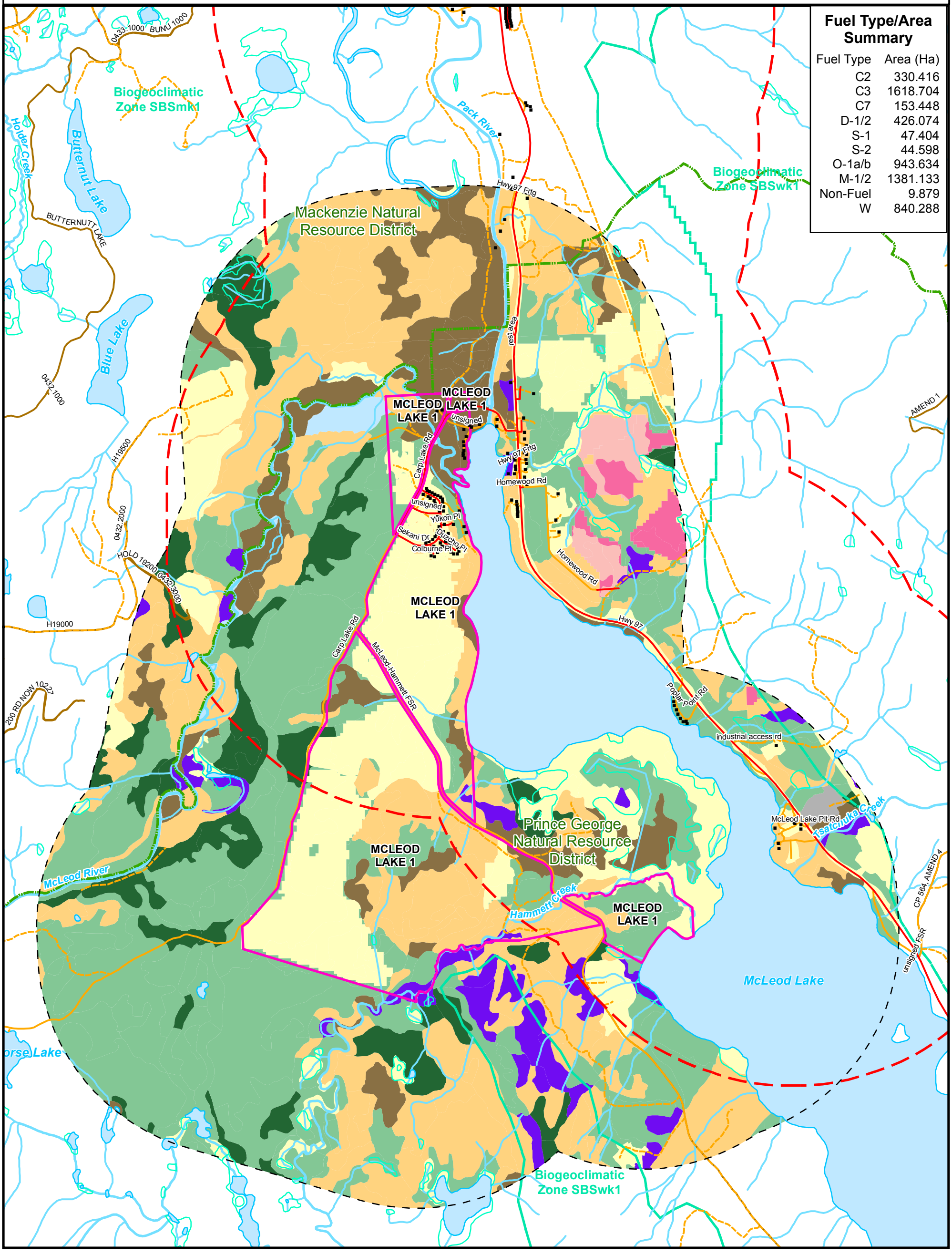
- McLeod Lake IR1
- Wildland Urban Interface - 2 Km
- McLeod Lake IR1 2km buffer
- Structures
- Natural Resource Districts
- Biogeoclimatic Zones

Fuel Type

- C-2
- C-3
- C-7
- D-1/2
- S-1
- S-2
- O-1a/b
- M-1/2
- Non-Fuel
- Water
- Paved Roads
- Loose Roads
- Rough Roads
- Forest Tenure Roads
- Lakes
- Wetlands
- Headwater Streams
- Streams and creeks
- Rivers

Fuel Type/Area Summary

Fuel Type	Area (Ha)
C2	330.416
C3	1618.704
C7	153.448
D-1/2	426.074
S-1	47.404
S-2	44.598
O-1a/b	943.634
M-1/2	1381.133
Non-Fuel	9.879
W	840.288



Appendix J: CWPP Zones Map

McLeod Lake Indian Band (IR1)

Community Wildfire Protection Plan

CWPP Zones

GEOTERRA
INTEGRATED RESOURCE SYSTEMS

Scale:
1:35,000

Coordinate System: NAD 1983 BC Environment Albers
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Standard Parallel 1: 50.0000
Standard Parallel 2: 58.5000
Latitude Of Origin: 45.0000
Units: Meter

Date: 2017-01-17

Legend

CWPP Zone					
1	McLeod Lake IR1	Paved Roads	Wetlands
2	Wildland Urban Interface - 2 Km	Loose Roads	Headwater Streams
3	Structures	Rough Roads	Streams and creeks
Plots	Natural Resource Districts	Forest Tenure Roads	Rivers
	Biogeoclimatic Zones	Lakes	

CWPP Zones

Zone	Area (Ha)
1	269.259
2	3556.693
3	1188.003

Biogeoclimatic Zone SBSmk1
Holder Creek
Butternut Lake
BUTTERNUT LAKE
0432.1000
BUNU 1000
Blue Lake
Pack River
Hwy 97 Frtg
Mackenzie Natural Resource District
Biogeoclimatic Zone SBSwk1
Zone 3 Cutblock Low risk
rest area
Zone 2 Timber values Moderate risk
MCLEOD LAKE 1
unsigned
Zone 1 Close to structures High risk
Homewood Rd
Carp Lake Rd
Yukon Pl
Sekani Dr
Dzitcho Pl
Colburne Pl
Plot 2
Plot 1
Plot 3
AMEND 1
H19500
0432.2000
HOLD 19200
H19000
200 RD NOW 10227
Carp Lake Rd
McLeod-Hammett FSR
Poplar Point Rd
industrial access rd
Prince George Natural Resource District
McLeod Lake Pit Rd
Tsatchuka Creek
McLeod River
Hammett Creek
CP 564, AMEND 4
unsigned FSR
McLeod Lake
orse Lake