Wildfire Mitigation Strategy

July 2015

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Acknowledgements

The development of the Wildfire Mitigation Strategy and Preparedness Guide was made possible by a FireSmart grant received by the Association of Summer Villages of Alberta (ASVA). Itaska Beach, in collaboration with the ASVA, applied for the FireSmart grant which is distributed by the Forest Resource Improvement Association of Alberta (FRIAA). This grant was awarded to the ASVA to assess risks and hazards associated with wildfire/urban interface situations. The Wildfire Mitigation Strategy and Wildfire Preparedness Guide are the products of this grant. Environment and Sustainable Resource Development (ESRD), *Guidebook for Community Protection* (2013), and Partners in Protection, *Protecting your Community from Wildfire* guide (2003), were essential in the development and writing of the Wildfire Mitigation Strategy.

Executive Summary

Summer Villages are desirable places to live because of their sought-after environments; however, these environments come with a threat. This threat is wildfire. Wildfire is an important aspect of the natural ecological cycle. Living in such areas where structures such as cabins and houses are next to or near wildland is referred to as the wildland/urban interface (WUI). These WUIs increase the possible impact of wildfire to the community and to its societal values. As the possibility of wildfire increases, so do the consequences in terms of: economic, social and personal impacts. These impacts can be devastating and tend to take a long time to recover from.

The purpose of the Wildfire Mitigation Strategy is to inform people of a proactive approach to mitigating wildfire in the WUI. If a community encompasses a proactive FireSmart stance, the threat of wildfire will be reduced. This means that individuals within the community realize that they cannot merely rely on fire departments and that mitigating wildfire threat is a shared responsibility of the community. The Wildfire Mitigation Strategy will provide strategies and recommendations, which if implemented, will assist in reducing the losses from wildfires. The plan includes input from a variety of stakeholders.

Below is an overview of recommendations, according to WUI disciplines, for Itaska Beach to assist in addressing wildfire threats. With continuous efforts by the entire community to implement these recommendations wildfire threat will be reduced.

For the detailed recommendations please refer to section 5.0 of this document.

Type	Recommendation
Education	The Summer Village educates and encourages public engagement with FireSmart using newsletters, websites, and open house meetings.
	The Summer Village identifies a willing community leader to work with the community on FireSmart initiatives. This will lead to community recognition by FireSmart Canada.
Development	The Summer Village takes measures to develop an emergency access into Itaska Beach.
	The Summer Village meets with local fire station for an orientation day to discuss emergency response issues associated with narrow side roads and one main access/ egress point.
Vegetation Management	County maintains the ROWs surrounding the village.
	Trees being felled onto forest reserve are limbed so that the tree is in contact with the ground.
	The Audubon Society and the Summer Village formally meet to discuss the long term management of the Audubon's land and work together to achieve common goals.
	Property owners mow and maintain grass, debris, and other combustible materials. Prune conifer trees to a height of 2 meters above ground level.
	Summer Village supplies a debris disposal service to assist residents with vegetation cleanup.
Legislation	The Summer Village amends the Fire Ban bylaw to include specific dimensions for incinerator screens and fire pit sizes as well as incorporate a fire hazards section.

*Note: A glossary of terminology used in this paper can be found in **Appendix I**.*

Table of Contents

1.0 Introduction

A Wildfire Mitigation Strategy is designed to assist summer villages identify their level of susceptibility to wildfire, as well as to provide recommendations on how to mitigate against wildfire based on the risks and hazards within the village and surrounding area. The Wildfire Preparedness Guide (**Appendix II**) compliments the Mitigation Strategy to serve as a strategic document to assist emergency responders from Wetaskiwin Fire Services during an incident within Itaska Beach. These two documents will assist Itaska Beach in reducing fire behaviour potential, fire occurrence risk, and exposure of values at risk to fire as well as increasing the fire suppression capabilities.

Initially the project began with a field assessment where data was gathered on the differing community attributes; specifically those that were vital to the development of both documents. Data from field assessments was analyzed and the results incorporated into developing the Wildfire Mitigation Strategy and its recommendations. Completed plans were sent to the Itaska Beach council for review. Attributes considered in the field assessments included:

- Community and landscape descriptions
- Forest fuel types
- Values at risk: standard, critical, dangerous goods, and special values
- Access
- Presence of utilities
- Emergency response characteristics
- Existing fuel management schemes

The process to construct the Wildfire Mitigation Strategy and the Wildfire Preparedness Guide was strategic and involved many stakeholders. Discussing the perceived risks and hazards with participating stakeholders is carried out with the intent to generate support for implementation of recommendations.

The Wildfire Mitigation Strategy is organized into four main sections: Planning Area and Stakeholders, Wildfire Threat Assessment, FireSmart Activities, and Summary of Recommendations. The Planning Area and Stakeholder section describes the eco-region the village lies within as well as the stakeholders involved with the plan. The Wildfire Threat Assessment for the planning area considers values at risk, wildfire behaviour, wildfire incidence and wildfire capabilities. Wildfire behaviour potential was determined by using the fire growth model, Prometheus. The FireSmart Activities section is an evaluation of risks and hazards found within Itaska Beach. The Summary of Recommendations section is primarily based on the issues that were recognized in the FireSmart Activities section.

1.1. Objectives

- Identify wildfire risks and hazards
- Develop strategies to help mitigate risks and hazards
- Educate community about FireSmart
- Develop strategies to help the continuing education about FireSmart
- Ensure procedures and practices are effective for managing fire risks and hazards (i.e. bylaw review)

2.0 Planning Area and Stakeholders

2.1 Planning Area

The Summer Village of Itaska Beach is located on the eastern shore of Pigeon Lake, within Leduc County, approximately 90 km southwest of Edmonton, Alberta (**Figure 1**). The planning area includes Itaska Beach and adjacent lands up to 2 km from Itaska Beach's borders (**Appendix III**).

Although Itaska Beach lies within the County of Leduc, the firefighting capabilities come from the County of Wetaskiwin. The two closest communities are the Summer Village of Sundance Beach to the northwest and the Summer Village of Golden Days to the south.

The Summer Village of Itaska beach and its planning area lie within the Dry Mixedwood Sub-region of the Boreal Forest Natural Region. The Dry Mixedwood is transitional between the Central Parkland and Central Mixedwood Sub-regions and these three have common plant community types. The most common species of the three sub-regions is Trembling Aspen (*Populus tremuloides*).Typically, Balsam poplar is found with aspen especially in moist areas. Also common are coniferous species with widespread mixed stands of aspen and white spruce. Peatlands can be common throughout this sub-region with some areas being more extensive than others. The natural terrain can typically vary from level to gently rolling in the dry Mixedwood Sub-region. Typically agriculture dominates the landscape in this sub-region.

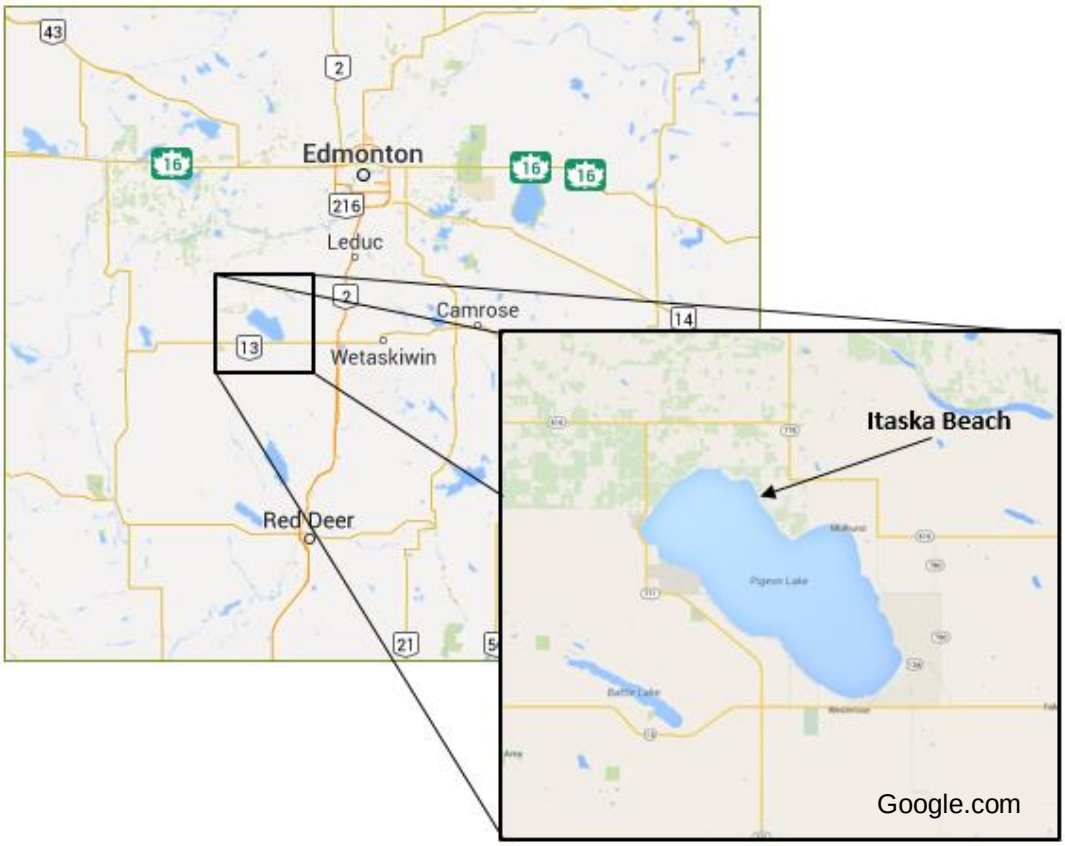

Figure 1. General location of Itaska Beach

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2.2 Stakeholders

The process to produce the Wildfire Mitigation Strategy and the Wildfire Preparedness Guide included speaking with various stakeholders to aid in addressing multiple disciplines. The beginning of the process started with general meetings with the Association of Summer Villages of Alberta (ASVA) to discuss the scope of plans for 25 villages. When the general meetings were completed, each village Chief Administration Officer was notified and consulted.

The Summer Village of Itaska Beach reviewed the Wildfire Mitigation Strategy, considered recommendations, approved the plan, and is responsible for implementing strategies. ASVA administered the project reporting and funding as well as acted as liaison and setting up stakeholder meetings. Wetaskiwin Fire Services provided local knowledge, strategies, and tactics for fire suppression. Alberta Agriculture and Forestry provided technical expertise and guidance throughout the process. Although Itaska Beach lies within Leduc County, currently Wetaskiwin Fire Services are responsible for structural and wildland fire suppression within Itaska Beach.

Knowledge and assistance about the planning area was provided by several stakeholders. Key stakeholders involved in the planning are:

- The Summer Village of Itaska Beach
- The residents of Itaska Beach
- Wetaskiwin Fire Services
- Association of Summer Villages of Alberta (ASVA)
- Alberta Agriculture and Forestry
- Battle River Watershed Alliance

3.0 Wildfire Threat Assessment

Wildfire threat is assessed by analyzing values at risk, wildfire behaviour potential, wildfire incidence, and firefighting capabilities within the planning area. Wildfire threat in Itaska Beach is very high during the spring and fall and high during the summer. The reason for the ratings is because of the presence of spruce in the forested area to the east of the community. Wildfire Behaviour maps (**Appendix IV**), Wildfire Threat Rating maps (**Appendix V**), and the Prometheus Wildfire Model (**Appendix VIII**) were used to assist the wildfire threat analysis. Wildfire Behaviour and Wildfire Threat Rating maps were acquired from FireWeb; which is operated by Agriculture and Forestry.

3.1 Values at Risk

Values at Risk is a term that encompasses four broad types of values: standard, critical, dangerous goods, and special values. Standard values are considered to be homes and other common structures found in communities. Critical values are the infrastructures that are vital to the wellbeing of those who reside in the planning area. Dangerous goods values are anything which may pose a safety threat to emergency responders or the public. Special values consist of areas that have natural, cultural, historical, or emotional importance to a community. Values at risk are identified in **Table 1** and on the operations map (**Appendix II**).

Table 1. Values at Risk

Values at Risk	Description	
	Within Itaska Beach	**Planning Area**
Standard	76 residences	N/A
Critical	None identified	None identified
Dangerous Goods	2 Sewage lift stations	Pipeline ,Oil and Gas
Special	Audubon forest reserve	None identified

Note: Alberta's electrical distribution system delivers low voltage electricity directly to consumers; these lines are not considered critical infrastructure. High voltage electrical transmission lines are considered critical infrastructure.

3.2 Wildfire Behaviour Potential

Wildfire behaviour is "the manner in which fuel ignites, flame develops, and fire spreads and exhibits other related phenomena as determined by the interaction of fuels, weather, and topography[1]."

3.2.1 Vegetation Fuel Types

The landscape within 2 km of Itaska Beach (**Appendix VI**) consists of agricultural lands (**Figure 2**), deciduous stands (**Figure 3**), spruce patches (**Figure 4**) and mixedwood patches (**Figure 5**). Agricultural lands take up the majority of the landscape and were considered non-fuels because the Canadian Forest Fire Behaviour Prediction System (CFFBP) does not have data on how fires behave on agricultural lands; it must be recognized that wildfires can be sustained on these lands. Forest vegetation types generally consist of mature to over-mature aspen and poplar with shrubby understories. Over-mature stands have a buildup of dead and down woody material. Patches of spruce and mixedwood occur within the larger, pure deciduous stands. Anywhere that is less than 25% vegetated, such as within a community, is considered a non-fuel for the purposes of landscape wildfire prediction. Ground-truthing, satellite imagery and aerial photography were all used to identify forest fuel types, by a certified AVI photo interpreter, in accordance with CFFBP. **Table 2** shows common language corresponding to their CFFBP designation.

Table 2. CFFBP designation.

CFFBP Designation	Common language Equivalent
D1	Deciduous
O1	Grass
C2	Spruce
M1	Mixedwood

[1] The 2002 Glossary of Forest Fire Management Terms – Canadian Interagency Forest Fire Centre (2002)

Figure 2. Agricultural fuel type

Figure 3. Deciduous fuel type

Figure 4. Spruce fuel type

Figure 5. Mixedwood fuel type

3.2.2 Fire Season Weather

Temperature, relative humidity, precipitation, and wind speed/direction were used to understand seasonal wildfire potential within, and surrounding, Itaska Beach. Historical weather (**Table 3**) was acquired from March 1, 2005 – October 31, 2014 from the Breton Plots Weather Station (Climate ID 3010816), near Breton Alberta, 24 km west of Itaska Beach. Temperature, relative humidity and wind speed were averaged using daily noon actuals; values at 12:00 noon. Precipitation (**Figure 6**) was calculated using the monthly average. The Fire Weather Index (FWI) is a general index of fire danger throughout forested areas in Canada[2]. The 90th percentile FWI was calculated to better understand what months are at a higher risk of sustaining a wildfire in the Itaska Beach area. The 90th percentile was calculated (FWI 14.1) and all days equal to, or greater than the 90th percentile are considered to be days where a wildfire could spread (**Figure 7**). Seasonal prevailing wind direction, in the form of wind roses, was generated using the "Canadian Wind Energy Atlas" website[3] (**Figure 8, Figure 9, and Figure 10**). Wind roses were generated seasonally using a height of 30 meters; 30 meters was the closest measurements to the ground.

Table 3. Weather data

Breton Plots, Alberta (Climate ID 3010816) (2005 - 2014)						
Season	**Month**	**Average Temp (ºC)**	**Average RH (%)**	**Average Precipitation (mm)**	**Average Wind Speed (km/h)**	**90th Percentile FWI (average days/year)**
Spring	March	1	54	16	10	1
	April	7	41	40	14	6
	May	14	46	66	13	6
Summer	June	17	55	78	11	2
	July	20	55	104	10	2
	August	19	57	57	9	2
Fall	September	16	53	33	11	4
	October	9	54	16	11	2

[2] Natural Resources Canada. *Canadian Wildfire Information System.* Accessed February 24, 2015

[3] http://www.windatlas.ca/en/maps.php

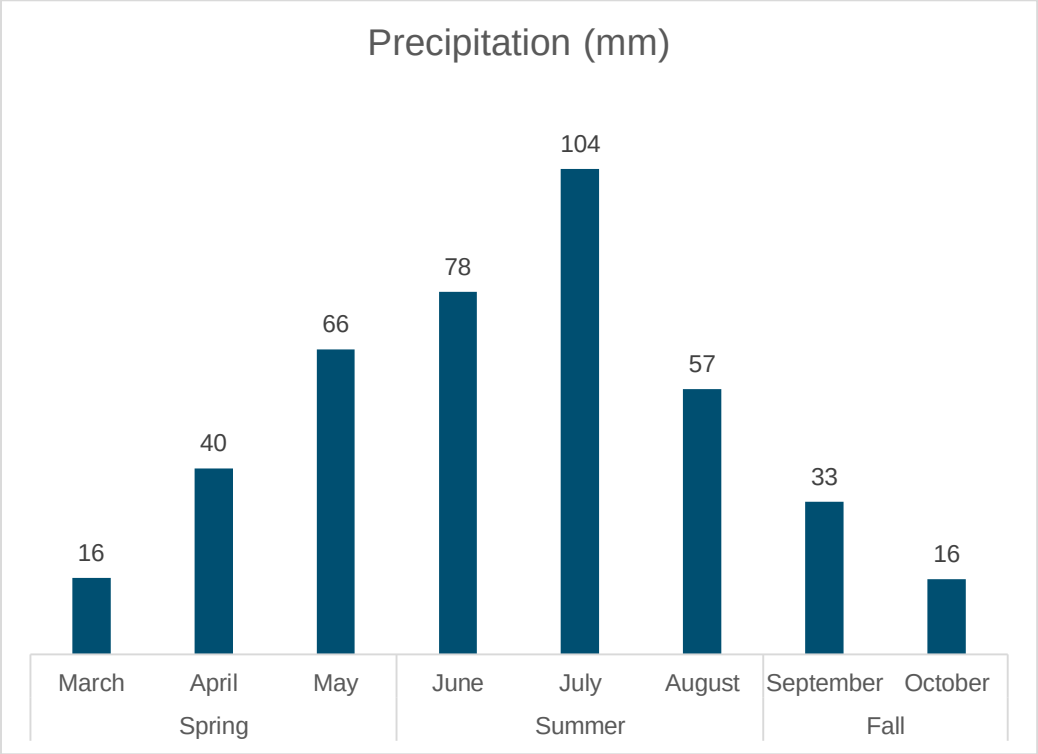

Figure 6. Average precipitation (mm)

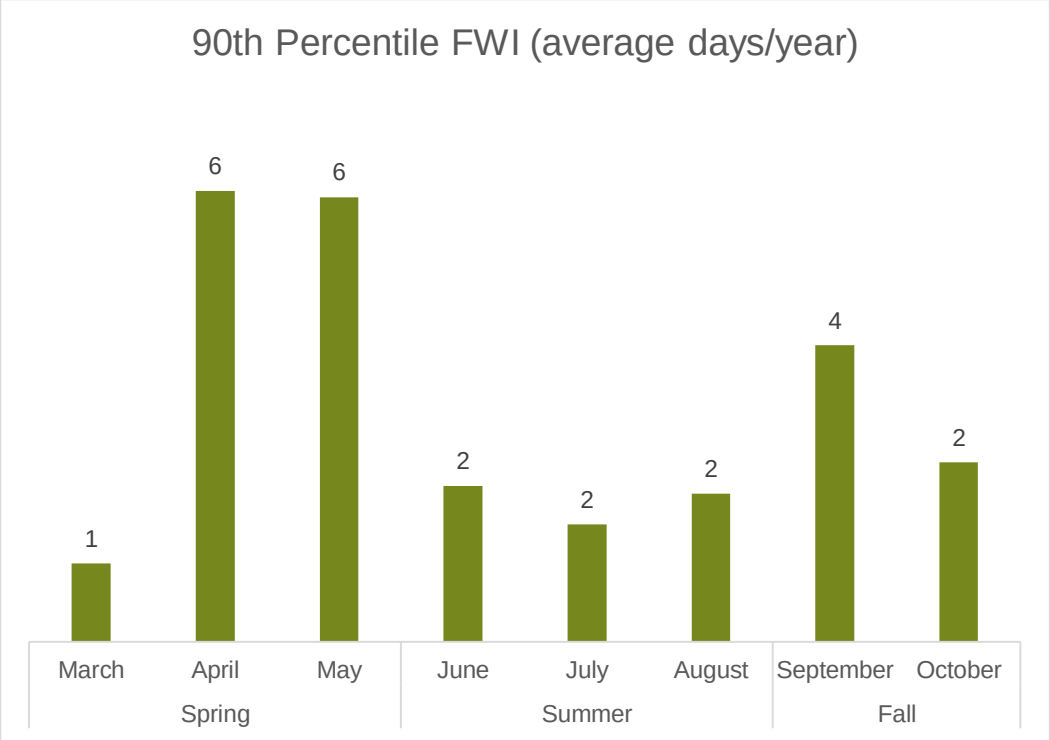

Figure 7. 90th percentile FWI

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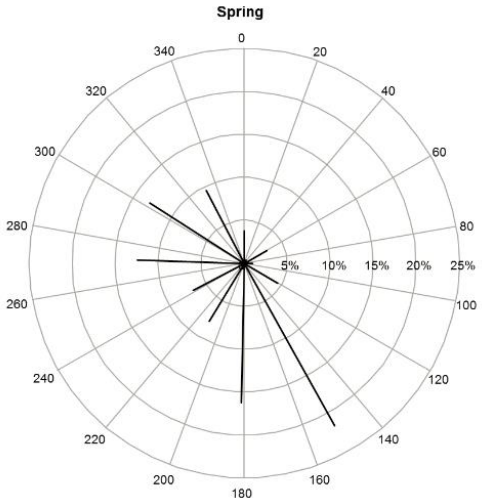

Figure 8. Spring prevailing wind

Spring winds are predominantly out of the southeast or northwest but ranges from southeast to northwest.

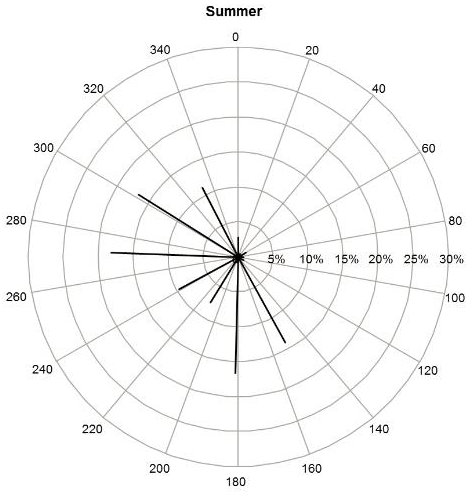

Figure 9. Summer prevailing wind

Summer winds predominantly come out of the northwest to west, with a range from northwest to southeast.

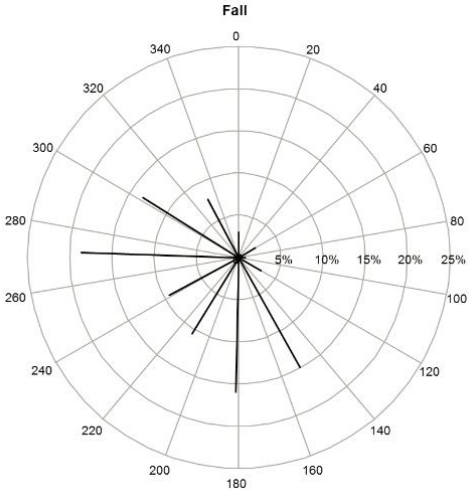

Figure 10. Fall prevailing wind

Fall winds are predominantly out of the west, with a range of northwest to southeast.

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3.2.3 Topography

Topography influences fire behaviour similar to that of wind. As the slope of a hill increases so will fire spread. It is important to identify slope to proper analyze potential fire behaviour. The topography in the planning area is generally flat (**Appendix VII**). The elevation change in the area will have minimal effect on fire spread.

3.2.4 Wildfire Behaviour Analysis

Prometheus, a widely utilized wildfire growth model across Canada[4], is implemented in this strategy to better understand how a fire may be influenced by the vegetation fuels, weather and topography observed in the planning area. Prometheus simulations assist wildfire consultants in analyzing the possible intensity, size and consequences of a wildfire. Information gathered from simulations can then be applied to the seven wildfire disciplines (**Section 4.0**) to help mitigate against a destructive wildfire. As with all models, Prometheus has limitations and assumptions. The assumptions made in this model are listed in **Table 4**.

Table 4. Assumptions

Assumptions		
Model Assumption		**User Assumption**
No fire suppression		Grass 80% cured
Fuel types consistent		Scenarios start at 10:00
Only forest fuels considered		90th percentile weather will support fire growth
Barriers are effective if they are 1.5 times wider than flame lengths		Weather in Itaska Beach does not vary from Breton Plots Weather Station
Barriers include roads, waterbodies, and large areas of maintained or non-fuels		Topography is flat and not imperative to scenario
Does not consider spotting (**Figure 11**)		An area that is less than 25% vegetated is a non-fuel

Figure 11. Spotting

[4] Development and Structure of Prometheus: the Canadian Wildland Fire Growth Simulation Model (2010)

With Prometheus, two scenarios, Scenario 1 and Scenario 2, were generated for Itaska Beach (**Appendix IX**). Both scenarios used days where weather was above the 90th percentile FWI; days above the 90th percentile were assumed to sustain fire growth. Weather data from 10:00 – 22:00 was chosen from an actual date from Breton Plots Weather Station.

Scenario 1:

Table 5. Summary of weather and fire data for scenario 1

Summary Weather on May 11, 2011				
Max Temperature	**Min Relative Humidity**	**Wind Direction**	**Average Wind Speed**	**Max FWI**
21	23	Southeast	33	47.6
Summary Fire Data				
Ignition Point	**Time of Ignition**	**Fire Growth Stopped**	**Total Area Consumed**	**General Fire Behaviour**
RR 13	13:00	22:00	88.97 ha	Moderate to High

During the first hour the fire spreads over an area of five hectares. The fire spreads rapidly during until 16:30 hours reaching a size of 49 hectares. After 16:30 the fire grows with flanking fires on the east and west sides of the fire. The fire reaches a final size of 88.97 hectares at 22:00 and has a moderate fire behaviour.

Scenario 1 is an extreme simulation however it does illustrate areas of concern for Itaska Beach. The pockets of spruce in the northern section of the community are susceptible to extreme fire behaviour. Extreme fire behaviour will generate spotting which increases the ignition risk of structures. A fire such as scenario 1 would most likely overwhelm local resources. Special resources such as bull dozers and helicopters may be needed to extinguish a fire of this size. This example demonstrates the need for all community members to participate with FireSmart. If all properties along the eastern edge are FireSmart it will create a defensible barrier to the fire spreading into the community and decrease the potential of home ignitions.

Scenario 2:

Table 6. Summary of weather and fire data for scenario 2

Summary Weather on April 21, 2005				
Max Temperature	**Min Relative Humidity**	**Wind Direction**	**Average Wind Speed**	**Max FWI**
21	26	West	17	24
Summary of Fire Data				
Ignition Point	**Time of Ignition**	**Fire Growth Stopped**	**Total Area Consumed**	**General Fire Behaviour**
Range Road 13	12:00	20:00	46 hectares	Low to Moderate

Scenario 2 represents a very high fire event. The simulation was ignited at 12:00 and during the first hour grows to 0.62 hectares. The fire grows slowly until 14:00. From 14:00 until 15:30 the fire stops growing because winds die down. At 15:30 the wind speed increases to 19 km/h causing the fire to continue spreading. The fire grows until 20:00 where it reaches a final size of 46 hectares (113 acres).

This simulation shows a slow growing fire in the aspen/ poplar stand. This simulation would most likely not overwhelm local fire departments however special equipment, such as bull dozers, may be needed to fully extinguish this fire. Fire would be difficult to extinguish where access may be a problem.

3.3 Wildfire Incidence

Grass fires are the most common type of wildfires within Wetaskiwin County. Wildfires are common during the spring in and around First Nations Reservations within the county as well as natural areas in the western section of Wetaskiwin County. Human activity is the general cause of wildfires although lightning does cause fires in the county as well.[5]

Table 7. Wildfire incidence

Wildfire Incidence in Wetaskiwin County (2014)	
	Total
Total Outside Fires	37
Total Structural fires	16

[5] Correspondence with Wetaskiwin Fire Chief – October 16, 2014

3.4 Firefighting Capabilities

Wetaskiwin County operates six fire departments throughout the county (**Table 7**). All departments rely mainly on volunteer firefighters. Bush trucks and mini-pumpers are on pick-up truck chassis and tend to be better suited to action wildfires. All departments have water tenders which will benefit remote firefighting by supplying water to areas where water sources may not be readily available. Specialized equipment, such as ATVs can increase firefighter mobility during a wildfire situation by helping move equipment and small pumps.

Table 8. Fire department distance and resources

Fire Department	Distance from Itaska Beach	Manpower	Quick Response Bush Truck	Water Tender (Capacity)	Specialized Equipment
Mulhurst	12 km	24	1	1 (5,678 L)	1-Side by Side and Trailer
South Pigeon Lake	33 km	18	2	2 (5,678 L, 9,464 L)	N/A
Winfield	50 km	12	1	1 (9,464 L)	Cascade Trailer
Millet	50 km	28	1	1 (6,200 L)	N/A
Wetaskiwin	60 km	35	1	1 (9,464 L)	JD Gator with 90 gallon water tank with class A foam capabilities
Buck Lake/ Alder Flats	85 km	Not available	1	1	N/A

4.0 FireSmart Activities

Recommendations were based on wildland/ urban interface disciplines while considering values at risk, wildfire behaviour potential, wildfire incidence, and firefighting capabilities. Wildland/urban interface disciplines, as identified by the *FireSmart Guidebook for Community Protection* (2013), are:

1. Public Education
2. Development
3. Vegetation Management
4. Legislation
5. Inter-Agency Cooperation
6. Cross-Training
7. Emergency Planning

4.1 Public Education

Proper public education will increase resident's understanding of recommendations created for wildfire mitigation. Newsletters, websites, and open house meetings are all important in the distribution of FireSmart information. The objectives of FireSmart must be highlighted and explained in the distribution medium to increase the success of resident education and engagement.

Recommendation 1

The Summer Village educates and encourages public engagement with FireSmart using newsletters, websites, and open house meetings

4.1.1 Information

Information distributed should include, but not be limited to, three fuel management approaches; fuel removal, reduction, and/or conversion. Zone 1, the area within a 10 m radius from structures, should be highlighted as the main priority area for Itaska Beach. This should have priority as maintenance of the area will reduce the risk of fire ignition and increase the defensibility of the structure. To assist home owners, FireSmart Canada's Structure and Site Assessment form is attached in **Appendix IX**.

4.1.2 Distribution

The council of Itaska Beach should ensure ongoing distribution and availability of FireSmart information in the spring and summer so that it is available during the seasons when property owners will most likely conduct vegetation management. Public notices should only be done with seasonal relevance; there should not be notices in the winter. Once the council establishes FireSmart procedures within Itaska Beach, word of mouth and public involvement will assist the education process. The goal of education is to develop engaged and dedicated landowners to create a community with a FireSmart culture.

4.1.3 Educational Resources Implementation

To assist the education process Itaska Beach should consider becoming a part of the FireSmart Canada Community Recognition Program (FCCRP)[6]. This process has already started with the Wildfire Mitigation Strategy and Preparedness Guide documents. A member of council, employee or a community leader of Itaska Beach would attend a Local FireSmart Representative workshop to learn

Recommendation 2

Summer Village identify a community leader to assist with FireSmart education

[6] FireSmart Canada, *FireSmart Community Champion Workshops* – Accessed August 14, 2014

how to acquire and maintain FCCRP for Itaska Beach. Having a community leader take on this responsibility will increase the success of the implementation of recommendations on private property.

Resource Contacts:

- Provincial FireSmart Representative Stuart Kelm
  - Email: stuart.kelm@gov.ab.ca
  - Phone: (780) 422 4452

Resource Links:

- https://www.firesmartcanada.ca/
- http://agriculture.alberta.ca/acis/climate-maps.jsp

4.2 Development

4.2.1 Access

Itaska Beach only has one access into the community. Although roads (**Figure 12**), turnarounds (**Figure 13**) and ditches are in fair condition for two way traffic, one access is a concern when considering access/egress of emergency responders during a disaster situation. One access is prone to being blocked off which would be unfavorable in an emergency. It is recommended that Itaska Beach establish an emergency access into the community. An emergency access will be a long-term process for Itaska Beach. To mitigate against the problems associated with only one access it is recommended that Itaska Beach meet with the local Fire Department to discuss access issues and other possible limitations to safe access/egress.

Helicopter landing spots may be needed during a wildfire. Directly northwest of the intersection of Township Road 474 and Range Road 13 is a large flat area that could be utilized as a temporary staging area for a helicopter (**Figure 14**). If an emergency evacuation was ordered, the turnaround at the end of Beach Avenue could be used as an extraction point.

Recommendation 3

Summer Village develop emergency access

Recommendation 4

Summer Village meet with Fire Departments to discuss issues and strategies

NOTE: An emergency access does not require that a road be built; only a path or clearing that would accommodate a vehicle to pass through.

Figure 12. Main road

Figure 13. Turnaround.

Figure 14. Possible emergency landing spot

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4.2.2 Water Availability

Mulhurst Fire Department, which is the primary responder in Itaska Beach, primarily uses water tenders to suppress fires in the area. Additional water during wildfire season is easily accessible from the boat launch (**Figure 15** and **Figure 16**).

Figure 15. Access to boat launch

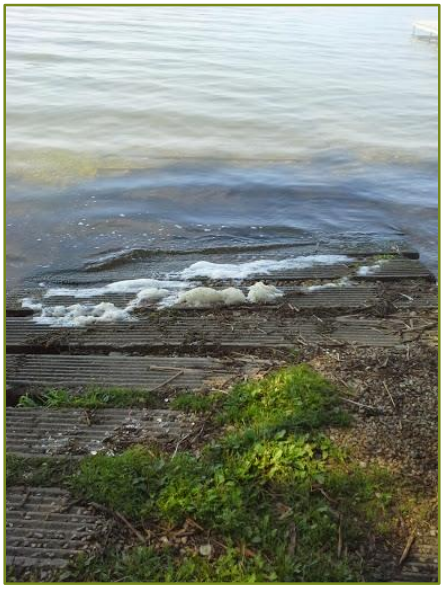

Figure 16. boat launch

4.2.3 Signage

Lot signage is excellent in the community. Each individual lot has a standard, metal sign, which is clearly displays the lot number and the summer village name (**Figure 17**). There is only one road in Itaska Beach that is clearly marked at the entrance with the community sign (**Figure 18**).

Figure 17. Lot signage

Figure 18.Community sign

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4.2.4 Utilities

The powerlines in Itaska Beach appeared in good standing, with no vegetation interference by non-insulated lines (**Figure 19**). The maintenance program by the electrical provider is sufficient to prevent unnecessary ignition potentials.

Figure 19. Powerlines

4.2.5 Staging Areas

Northwest of the intersection of Township Road 474 and Range Road 13 could be used as an operational staging area during an incident within Itaska Beach (**Figure 20**).

Figure 20. Staging area

4.2.6 Building Materials

The different materials used to build houses; the structure around them, as well as the condition of those materials will affect fire behaviour. The assessment of building materials in Itaska Beach was only based on what was visible from the road.

4.2.6.1 Roofing

Roofing in Itaska Beach tends to be a mix of asphalt shingles, tin or wooden shakes. Asphalt shingles, tin roofing and treated wooden shakes are fire resistant. It is important to make the distinction between treated and untreated wooden shakes as the untreated wooden shakes burn easily when exposed to radiant heat or direct contact of firebrands (embers)[7]. It was noted that some roofing had debris buildup (**Figure 21**). Debris buildup decreases the fire resistance of asphalt, tin and treated wooden shakes.

Figure 21. Debris build up on roof

Figure 22. Clear tin roof

[7] FireSmart Protecting Your Community From Wildfire – 2003

4.2.6.2 Siding

Siding materials within Itaska Beach are a mix of vinyl (**Figure 23**), wood (**Figure 24**) and stucco siding. Vinyl siding and wood siding are not fire resistant. Vinyl will melt when subjected to heat, exposing flammable materials underneath. Wood siding offers very little fire resistance; however logs or heavy timber exteriors are more fire resistant when compared to wooden siding.

Figure 23. Vinyl siding

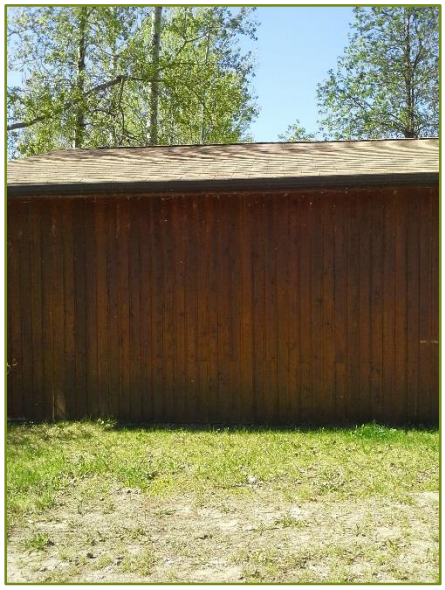


Figure 24. Wood siding

4.2.6.3 Decks

These structures can be of concern if they are not sheathed and if the deck is slotted. If the structure is slotted and not sheathed litter can accumulate underneath. **Figure 25** is an example of a properly sheathed deck.

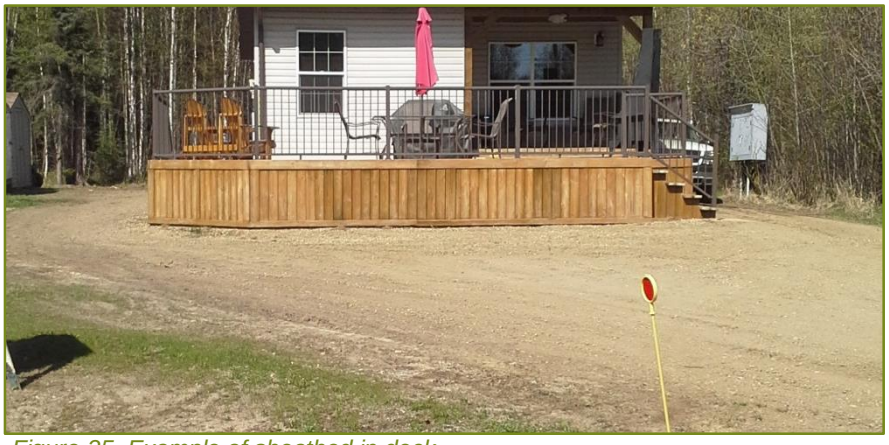


Figure 25. Example of sheathed in deck

4.2.7 Storage of Flammable Materials

Combustible debris (**Figure 26**) should be removed from properties and firewood piles should be no less than 10 meters from buildings. No large propane tanks were seen during the field assessment. However if property owners use propane they should move tanks, if possible, 10 meters away from buildings and maintain vegetation within a 3 meter radius.

Figure 26. Combustible debris pile

4.3 Vegetation Management

Application of FireSmart's three priority zones of vegetation management does not guarantee that fire will not affect a property or community. Vegetation management will reduce hazards and improve the defensibility of a structure or area. It must be noted that we do not advocate the clearing of vegetation in riparian, or other sensitive areas. Riparian areas are ecologically, socially, and economically important and should not be treated with FireSmart prescriptions.

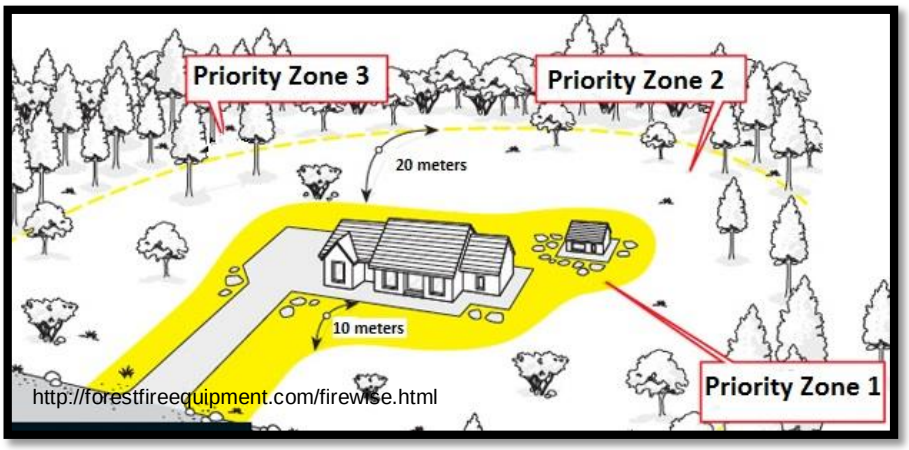


Figure 27. Priority zones around structures

Zone 1, 0 meters to 10 meters, also known as the first priority, is the most critical area to consider. Keeping this area clear of flammable vegetation and debris reduces the risk of homes igniting during a wildfire, increases defensibility of the structure and is essential to the FireSmart process.

Zone 2 is the area extending from 10 meters to a 30 meter radius from a building. Maintenance of priority Zone 2 acts to lower the intensity and the rate of spread of a wildfire. If Zone 2 is on the owner's property and interferes with a riparian zone, vegetation should not be modified, reduced, or removed[8].

Zone 3 extends out from 30 meters. Zone 3 could be necessary if there are high hazard levels due to heavy continuous forest vegetation and steep topography that are not reduced sufficiently by fuel management in Zone 2[9]. This zone will typically apply to the community or county.

Table 9. Zone 1, 2, and 3 Fuel Management

Zone 1	Zone 2 & 3
Mow grass (10 centimeters or less)	**Thinning understory**
Remove ground litter and downed trees	**Pruning lower branches (within 2 meters from the ground)**
Remove over mature, dead and dying trees	
Plant fire resistant vegetation	
Thin and/or prune existing vegetation	
Remove piled debris	

[8] Fisheries Act and/or Public Lands Act authority is required within riparian zones and the bed and shore of waterbodies prior to any disturbance to the vegetation or land.
[9] FireSmart Protecting Your Community from Wildfire – 2003

Landowners tend to be concerned about pruning conifer trees. Not all spruce and pine trees need to be pruned. **Figure 28** shows a spruce tree that does not require pruning. The lawn surrounding the tree is well maintained and there are no structures or other trees nearby. Only trees that could support fire spreading in the tops of the trees, also known as a crown fire, or ignite from a ground fire approaching. **Figure 29** shows spruce trees that could be pruned.

Figure 28. Example that does not require pruning

Figure 29. Example of spruce trees that require pruning

Resource and Education Links:

- Information on Riparian Areas of Alberta http://cowsandfish.org/
- FireSmart Guide to Landscaping - https://www.firesmartcanada.ca/images/uploads/resources/FireSmart-Guide-to-Lanscaping.pdf
- FireSmart Protecting Your Community - https://www.firesmartcanada.ca/images/uploads/resources/FireSmart-Protecting-Your-Community.pdf (Chapter 3 pages 3 -13)
- Tree Help Pruning Trees: a step-by-step guide - http://tree-pruning.com/index.html

4.3.1 County Vegetation Management

Vegetation is starting to encroach on county right of ways (ROWs) near Itaska Beach (**Figure 30**). Maintained ROWs ensure clear sightlines, visible signage as well as a clear and safe passage for emergency vehicles. It is recommended that the county be contacted, as needed, to maintain the ROW they are responsible for.

Recommendation 5

Summer Village contact county to assess vegetation encroachment onto county right-of-ways

Figure 30. County Right-of-way

4.3.2 Community Vegetation Management

The Itaska Beach Audubon Society owns the largest portion of forested lands within Itaska Beach. The primary goal of the Audubon Society is to conserve and protect the natural environment of their lands. One of the management actions the Audubon Society has implemented on their lands is the falling of danger trees onto the lands for saprophytic habitat. It is recommended that when these trees are felled extra effort is made so that the trees are directly touching the ground and not suspended in the air. This can be done by limbing the branches of the tree at the time it is felled. Trees suspended off the ground, by branches or other trees, have decreased moisture content from having more surface area exposed to the air. If the tree is in direct contact with the ground the moisture content will be higher which will increase decay. Faster decay speeds up the nutrient cycle as well as decreases fire behaviour by reducing the amount of fuel available to burn.

Recommendation 6

Audubon Society limb trees that are felled onto their land

It is recommended that the Audubon Society and the Summer Village of Itaska Beach have a formal meeting to discuss the long term management plan of the Audubon's land. It is important to work together to achieve common goals.

Recommendation 7

Audubon Society and Village Council meet to discuss long-term management goals

4.3.3 Residential Vegetation Management

Many of the residents of Itaska Beach are well maintained, but there are still issues within the priority zones that residents could address (**Figure 31**). It is recommended that residents implement Zone1 and Zone 2 FireSmart treatment areas on all private property within the summer village.

Figure 31. Combustible debris pile

Recommendation 8

Residents maintain Zone 1 and Zone 2 on private property, or up to the riparian zone; no vegetation management should happen in any riparian zone.

Recommendation 9

Summer Village supply a debris disposal service to assist residents with vegetation management on private property

To assist residents with Zone 1, 2 and 3 treatments and regular maintenance of their property it is recommended that the summer village offer a vegetation debris disposal service. This service would encourage property cleanup of wildfire hazards by supplying a means for property owners to dispose of flammable debris. These initiatives illustrate the importance of FireSmart and the dedication of the summer village to achieve a FireSmart Community.

4.4 Legislation

4.4.1 Fire Bylaw

The “Fire Ban” bylaw (#202) defines outdoor and incinerator fires allowed within the summer village. The definition of incinerator fires includes the need for a metal screen but does not state the recommended dimensions of the screen. It is recommended that a revision to the bylaw be done to include specific dimensions of an incinerator fire screen. Dimensions can vary depending on the values of the community. The county of Wetaskiwin does not have specific dimensions for a recreational fire pits therefore the following dimensions are an example from the Summer Village of Sandy Beach’s Open Burning Bylaw:

Recommendation 10

Summer Village review Fire Ban bylaw (#202)

- a safe clearance of approximately 3.0 meters, measured from the nearest fire pit or edge is maintained from buildings, property lines, or other combustible material;
- fire pit height must not exceed 0.6 meters measured from the surrounding grade to the top of the fire pit opening;

- fire pit is to be constructed of noncombustible materials such as bricks, concrete blocks, heavy gauge metal, or other non-combustible materials acceptable to the Fire Chief;
- a fire pit must not exceed 1.1 meters in diameter;
- The height of flames in a fire pit cannot exceed 1.0 meter.

The bylaw does not have a section that addresses fire hazards on private property. It is recommended that a section that describes or defines fire hazards is added to the Fire Ban bylaw. This will assist Itaska Beach with removing hazards to the community on private property. Including fire hazards into the bylaw will be a more diplomatic way to approach landowners that are not complying with the bylaw.

4.4.2 Development Bylaw

As per the community FireSmart protection guide, the suggested building development materials should be considered for inclusion in the bylaws.

Development Resource and Education Link:

- FireSmart Protecting Your Community - https://www.firesmartcanada.ca/images/uploads/resources/FireSmart-Protecting-Your-Community.pdf (Chapter 3 pages 28 -36)

4.5 Interagency Cooperation

Wetaskiwin County Fire Services provides primary emergency response services for Itaska Beach. To ensure the proper protective services are provided to the communities, the fire department has set up mutual aid agreements with several surrounding municipalities and agencies. These municipalities and agencies are:

Table 10. Mutual Aid Agreements

Adjacent Municipality / Agency	Mutual Aid Agreement
Brazeau County	Yes
Leduc County	Yes
County of Camrose	Yes
Ponoka County	Yes
Clearwater County	Yes
City of Wetaskiwin	Yes
Town of Millet	Yes
Agriculture and Forestry Rocky Mountain House Wildfire Management Area	Yes

Wildland/urban interface fires can at times exceed the capabilities of the local emergency responders. When mutual aid agreements are in place an understanding is confirmed that additional resources of personnel and equipment are identified and are available. They can also be beneficial to share specialized equipment as this will alleviate some of the cost and allow equipment to be shared. As an

example if the local fire department is in need of a sprinkler kit, but does not have one, they can put in a request to Agriculture and Forestry to obtain one. These agreements can include neighboring municipalities and in some cases industry. Annual reviews should be carried out; this ensures opportunities for fire protection officials to discuss and review any changes or updates.

4.6 Cross-Training

Agriculture and Forestry Rocky Mountain House Wildfire Management Area has stated that if local fire departments have an interest in joint exercises, they would welcome the opportunity. These exercises should emphasize mutual aid scenarios. Exercises could be coordinated with a hazard reduction burn. Having multiple agencies participate in these training exercises will benefit all parties by illustrating key differences in strategies, tactics, and equipment.

4.7 Emergency Planning

The Pigeon Lake Regional Emergency Response Plan (REMA) was made public July 16, 2014 and has the goal of preventing or minimizing losses to people, property, and the environment.[10] This document does not cover evacuations and processes as these are already iterated in the REMA. If interested in the evacuation and processes please refer to the Pigeon Lake Regional Emergency Response Plan.

Pigeon Lake Regional Emergency Response Plan - http://www.pigeonlakeemergencyagency.ca

[10] Regional Emergency Management Plan – July 16, 2014 (accessed online November 10, 2014)

5.0 Summary of Recommendations

The risk assessment tool concludes that if the suggested recommendations are implemented the fire hazard rating score will drop from 390 to 312 (**Appendix X**). Each of the recommendations is ordered upon urgency and effort to assist each of the communities in making a working plan. Urgency and effort levels were set using the following criteria:

Urgency is a measure of timeliness and is rated as high, medium and low meaning:

High	The recommendation is critical and should be commenced as soon as possible.
Moderate	Recommendation is important and may be worked on as a staged approach to program improvement.
Low	The recommendation may be completed as resources become available.

Effort is a measure of resources required over a period of time and is measured as high, medium low, meaning:

High	Requires direct project funding (for contracted services), possibly a multi-year project, preferably managed through dedicated government resources for the term of the project, involves significant external stakeholder involvement.
Moderate	May require direct project funding (for contracted services), generally completed can be within one business year, managed with assigned government resources and possibly involves external stakeholder input.
Low	Generally will not require direct project funding, managed through existing government resources as routine business, often can be completed within one or two business quarters and generally does not involve external stakeholders.

The following tables contain the recommendations, indicating their respective urgency and level of effort required for implementation.

5.1 Education Recommendations

Urgency	Effort	Recommendation	Frequency	Reference Section
Moderate	Moderate	**1. Recommendation Action:** The Summer Village educates and encourages public engagement with FireSmart using newsletters, websites, and open house meetings. **Project Lead:** Summer Village Council **Benefits:** Community Education and involvement.	Annually	4.1
Moderate	Moderate	**2. Recommendation Action:** The Summer Village identifies a willing community leader to work with the community on FireSmart initiatives. This will lead to community recognition by FireSmart Canada. Contact: Stuart Kelm. **Project Lead:** Summer Village Council **Benefits:** Community involvement and ownership of FireSmart; more resources for council to utilize.	One Time	4.1.3

5.2 Development Recommendations

Urgency	Effort	Recommendation	Frequency	Reference Section
Low	High	**3. Recommended Action:** The Summer Village develop an emergency access into Itaska Beach **Project Lead:** Summer Village Council **Benefits:** Increase evacuation capability	Annually	4.2.1
Moderate	Low	**4. Recommended Action:** The Summer Village meets with the local fire station to discuss emergency response issues associated with one main access/ egress point. **Project Lead:** Summer Village Council **Benefits:** Clear communication between community and fire department.	When needed	4.2.1

5.3 Vegetation Management Recommendations

Urgency	Effort	Recommendation	Frequency	Reference Section
High	Low	**5. Recommendation Action:** County maintains the ROWs they are responsible for. **Project Lead:** Summer Village Council **Benefits:** Allows signage to be visible and continues to allow that route to be a safe evacuation route.	When needed	4.3.1
Low	Low	**6. Recommendation Action:** Trees being felled onto forest reserve are limbed so that the tree is in contact with the ground. **Project Lead:** Audubon Society **Benefits:** Faster rate of decay.	When needed	4.3.2
Low	Low	**7. Recommendation Action:** Audubon Society and the Summer Village Council meet to discuss long-term management goals. **Project Lead:** Summer Village **Benefits:** Co-operation to achieve common goals	When Needed	4.3.2
High	Low	**8. Recommendation Action:** Property owners mow and maintain grass, debris, and other combustible materials. Prune conifer trees to a height of 2 meters above ground level (Priority Zone 1 and/or Zone 2 depending where property line ends). **Project Lead:** Property owners **Benefits:** Protecting property by removing points of ignition.	When needed	4.3.3
High	Moderate	**9. Recommendation Action:** Summer Village supply a debris disposal service to assist residents with Zone 1 and Zone 2 treatments on private property. **Project Lead:** Summer Village Council **Benefits:** Encourages residents to clear flammable debris from property	Annually	4.3.3

5.4 Legislation Recommendations

Urgency	Effort	Recommendation	Frequency	Reference Section
Low	Moderate	**10. Recommendation Action:** The Summer Village amends the Fire Ban bylaw. **Project Lead:** Summer Village Council **Benefits:** Empowers the village to control hazards to the community.	One Time	4.4.1

Appendices

Glossary

Barriers to Spread – A fire barrier is an area that cannot burn, or burns slowly, which emergency responders may use as a staging point, anchor point, safety zone, or evacuation route.

Buildup Index (BUI) – Total amount of fuel available for combustion.

Combustible Material – These materials must usually be heated before they will catch on fire at temperatures above normal (between 37.8 and 93.3 ^{0}C or 100 and 200 ^{0}F).

Coniferous – Plants that do not shed leaves in the fall. In this report coniferous is synonymous with spruce or pine trees.

Continuous Fuels – Patches of forest or grass fuels that do not have any barriers to spread. These areas may have the ability to support fire over longer distances.

Crossover – Occurs when the value of the RH is equal to, or lower than, the value of the temperature and is an indicator of potential extreme fire behaviour.

Cured or Curing – Dried or drying grass. Grass cures in the fall and remains cured until green up in the spring.

Danger Tree – A live or dead tree whose trunk, root system or branches have deteriorated or been damaged to such an extent as to be a potential danger to human safety.

Deciduous – Plants that shed leaves in the fall. In this report deciduous tends to mean aspen or poplar trees.

Drafting Water – The use of suction to move a liquid such as water from a vessel or body of water below the intake of the suction tank.

Dry Hydrant – A fire hydrant that is not pressurized. A dry hydrant is a pipe that goes out to a water body so that a pumper truck can draw water from water body.

Effort – A measure of resources required over a period of time.

Emergency Landing Spot – A possible site that is open and clear enough so that a helicopter, in a state of emergency, could land.

Fine Fuel Moisture Code (FFMC) – A numerical indicator of the ease of ignition of litter and other cured fine fuels such as small twigs, needles and grasses.

Fire Behavior – The manner in which fuel ignites, flame develops, fire spreads and exhibits other related phenomena.

Fire Hazard – The fire threat potential.

FireSmart – Actions taken to minimize the unwanted effects of wildfire.

Fire Resistant – Material that is designed to resist burning and withstand heat.

Fire Weather Index (FWI) – This is a numeric rating of fire intensity. It is suitable as a general index of fire danger throughout the forested areas of Canada.

Flammable – The material will burn or catch on fire easily at normal temperatures (below 37.8 degrees C or 100 and 200 deg F).

Flank Fire – A fire that is burning at an angle approximately 90^0 to the wind.

Fuels – Combustible materials. In this report fuels tends to describe trees, plant debris (such as dead branches, leaves, etc.) but may also include man made materials.

Head Fire Intensity (HFI) – The energy that a fire generates. HFI is separated into six classes, one being low fire behaviour and six being extreme fire behaviour. See **table below** for more information:

Head Fire Intensity Class Description & Firefighting Methods		
Head Fire Intensity	**Fire Behaviour**	**Firefighting Methods**
1	Very low vigour, smouldering ground or creeping surface fire, low intensity	Self-extinguishing unless high drought code and/or build-up index values prevail, in which case mop-up is generally extensive.
2	Low vigour surface fire	Direct attack by firefighters with hand tools and water is possible. Constructed fireguard should hold.
3	Moderately vigorous surface fire	Hand-constructed fireguards are likely to be challenged. Heavy equipment is generally successful in controlling such fires. Indirect attack suggested.
4	Highly vigorous surface fire, may be torching trees or intermittent crown fire	Control efforts at the fire's head may fail. Indirect attack only by firefighting personnel.
5	Very high vigorous surface fire or crown fire	Very difficult to control. Suppression action must be restricted to the fire's flanks. Indirect attack with aerial ignition may be effective.
6	Extreme disastrous fire	Suppression actions should not be attempted until burning conditions improve.

Heat Transfer – Exchange of thermal energy, between physical systems depending on the temperature and pressure by dissipating heat.

> **Conduction**: when heat (energy) is transferred through solid matter.
>
> **Convection**: when heat (energy) is transferred between objects that are in physical contact.
>
> **Radiation**: When heat (energy) is transferred from warmer surfaces to cooler surroundings. (eg. The heat from the sun)

Incinerator Fires – Burning of house hold waste in an approved container with proper screening and venting.

Inherent Risk – A fire hazard based on an evaluation of the current state of the community.

Initial Spread Index (ISI) – A numerical rating of the expected rate of fire spread.

Intensity – Measures of energy output. Amount of energy released during a fire.

Ladder Fuels – Fuels that provide a vertical continuity between surface fuels and crown fuels. (eg. tall grasses, shrubs, branches)

Mixedwood – A mixture of both coniferous and deciduous trees. Typically spruce and aspen.

Mutual Aid Agreement – Allows municipalities to prepare for emergency events that exceed that exceed their local resource capabilities.

Ninetieth Percentile (90th) – A measure of statistical distribution. The 90th percentile is the value for which 90% of the data points are smaller and 10% are bigger.

Points of Ignition – The point on the landscape where the fire was started.

Prevailing Winds – The predominant winds in that area.

Rate of Spread (ROS) – The distance a fire will spread in a given period, measured in meters per minute.

Relative Humidity (RH) – It is the ratio of moisture in the air (water vapor) to the amount that the air can hold at the same temperature and pressure if it were saturated.

Residual Risk – A risk based on an evaluation demonstrating the change in risk with the implementation of recommendations and the community proactively participating in FireSmart.

Right of Way (ROW) – A strip of land that is managed specifically for access to streets, roads and highways.

Riparian Zone – An area of land adjacent to a stream, lake, or wetland that contains vegetation that, due to the presence of water, is distinctly different from the vegetation of adjacent upland areas.

Risk – The probability of an undesirable event occurring.

Saprophytic Habitats – A habitat where organisms which obtain nutrients from dead organic matter.

Severity – A loss or change in organic matter both above and belowground.

Spotting – when a fire creates embers that travel through the air and can ignite fuels or structures (**Figure 11**).

Staging Area – An area where resources can be staged while they wait assignment.

Stand(s) – A group of trees.

Stakeholder – The range of groups and individuals who have a formal or informal stake in planning and management decisions.

Urgency – A measure of timeliness.

Wildland/Urban interface – The area where buildings are adjacent to, or within, forests, grasslands, scrublands, or other combustible vegetation.

Zone 1 – The area extending 0 to 10 meters from a structure.

Zone 2 – The area beyond Zone 1 that begins at 10 meters from a structure and extends to 30 meters from the structure.

Zone 3 – The area beyond Zone 2 that begins at 30 meters from a structure and extends to 100 meters from a structure.

WILDFIRE PREPAREDNESS GUIDE

Itaska Beach

July 2015
CPP Environmental

Key Contacts

Wetaskiwin County	1-780-352-3321
After hours	1-780-352-0005
SRD Rocky Mtn. House	1-403-845-8266
Utilities	
Itaska Beach	
Buck Mtn. Gas Co-op (Gas)	780-848-2808
Fortis (power)	310-4300
RCMP	
Emergency/Search and Rescue	911
Alberta Emergency Management Agency (AEMA)	1-866-618-2362
Village Administration Office	
Itaska Beach	1-780-312-0928

Fire Behaviour Factors

Forest Fuel– Grass (O1), Deciduous (D1), Coniferous (C2) in & around planning area.

Topography—Fairly flat

Values at Risk

Critical— Power distribution lines.

Dangerous Goods— 2 sewage lift stations/ pipeline oil & gas.

Special— Audubon Forest Reserve

Staging Areas

Itaska Beach-Farmers field just east of Itaska Beach.

Roads & Turnarounds

Signage- Has standard lot signage

Access— Community has 1 means of access/ egress.

Roads— Roads are 6-6.5 meters in width

Loop Turnarounds– Does not require backup maneuvers for large apparatuses.

Ditches—suitable for two-way travel. (Steep in places)

Private Driveways— Width is ~4meters; length ~15-20meters

Water Supply

Itaska Boat Launch

Mulhurst Dry Hydrant

Communications

County 163.32 (TX) 159.09 (TXRX) 91.5 (Tone)

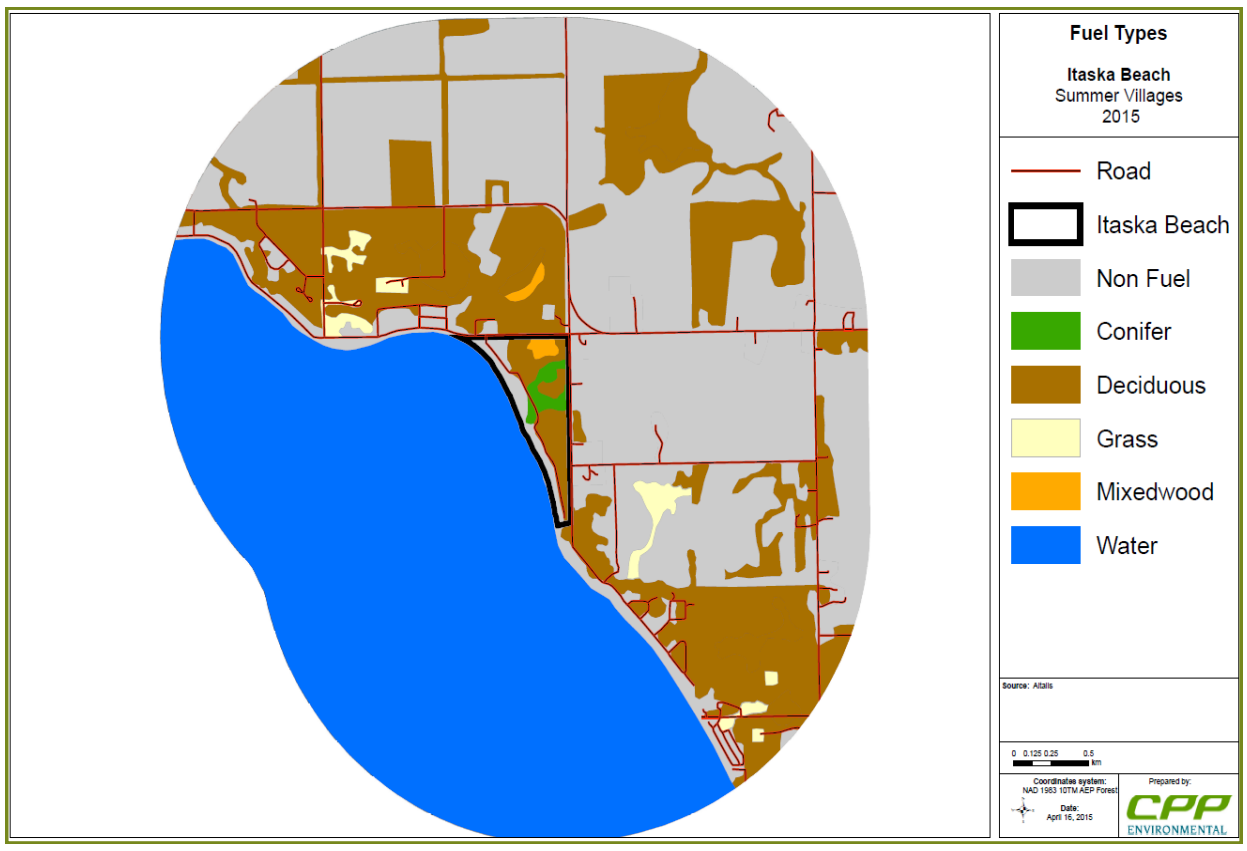
Mutual Aid (Provincial Fire) 156.8550 (TXRX)

Area Description

Number of residences: Itaska Beach (76).

Main access is good and the turnaround is wide enough for a large fire apparatus to turnaround.

Itaska Beach is approx. 9 km west of Mulhurst. Head north on 50th street, west on Hwy 616 continue on to Twn Rd 474 and south on Beach Ave.



Fire Department Resources

Mulhurst Bay Fire Department—9 km southeast

24-Manpower

1-Water Tender

1-Quick Response Bush Truck

1– Side by side and Trailer

South Pigeon Lake Fire Department—28km south

18-Manpower

2-Water Tenders

2-Quick Response Bush Truck

Winfield Fire Department—50km southwest

12-Manpower

1-Water Tenders

1-Quick Response Bush Truck

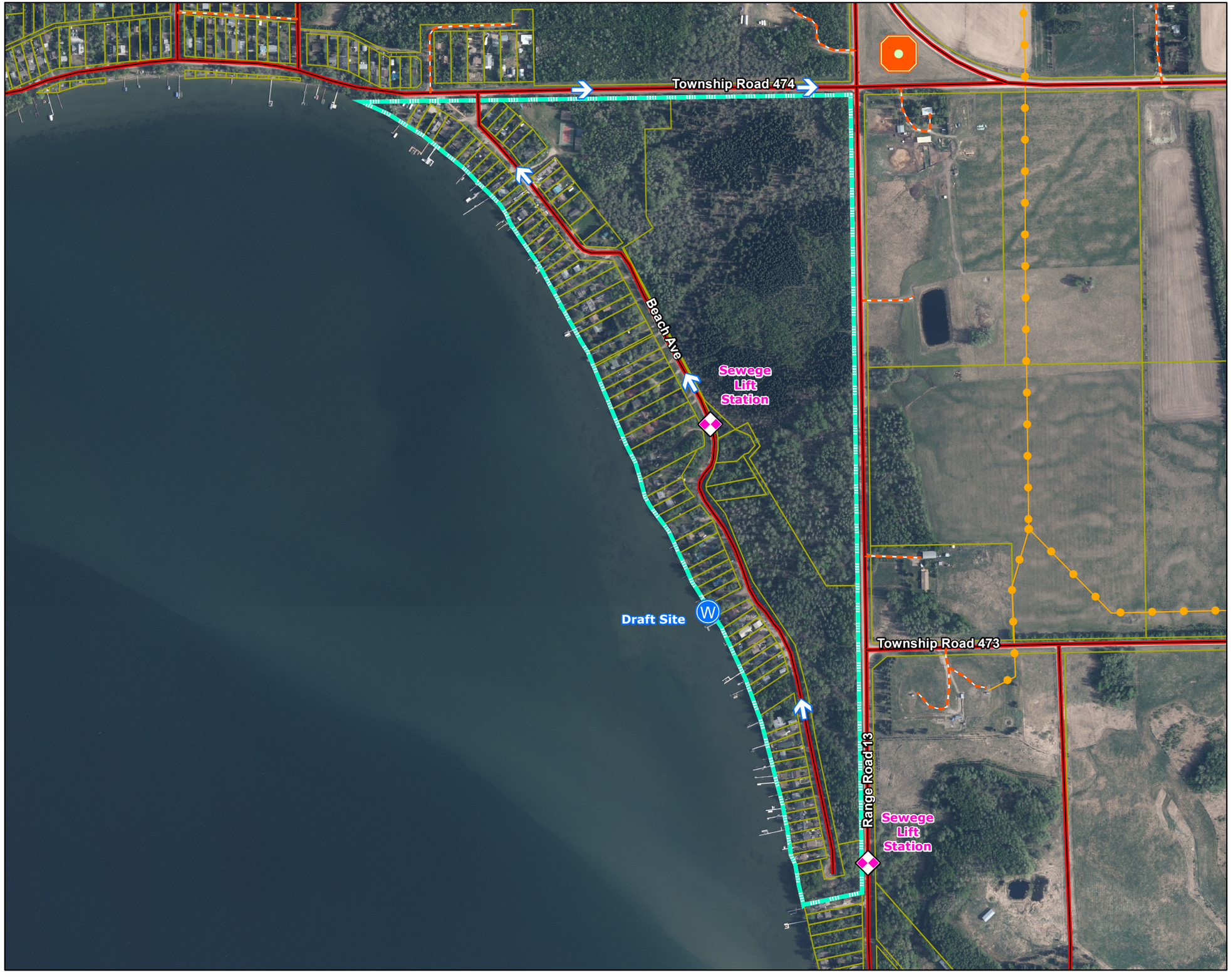
1-Cascade Trailer

Evacuation Protocol

Evacuation Route

North on Beach Ave then either east or west on Twn Rd 474.

Muster Point- Mulhurst Community Hall



Operations

Itaska Beach
Summer Villages
2015

- Itaska Beach
- Staging Area
- Draft Site
- Dangerous Goods
- Evacuation Route
- Primary Road
- Secondary Road
- Pipeline
- Private

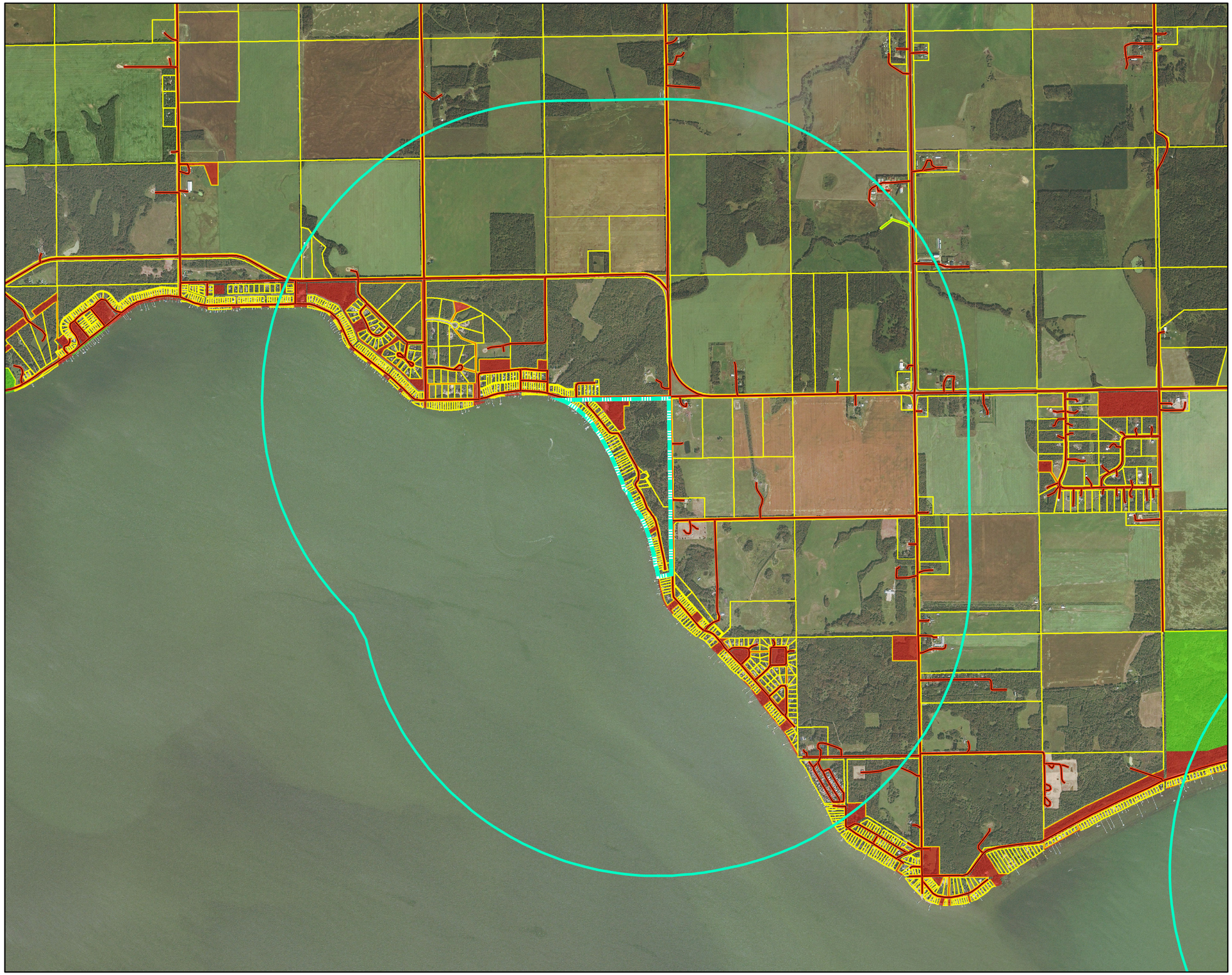
Source: ESRD, CPP Environmental

0 0.05 0.1 0.2 km

Coordinates system:
NAD 1983 10TM AEP Forest

Date:
April 7, 2015

Prepared by:
CPP ENVIRONMENTAL



Planning Area

Itaska Beach
Summer Villages
2015

Itaska Beach
Planning Area
Road

Classified Land Ownership

Federal
Municipal
Provincial
Private
First Nations Reserve

Source: ESRD, CPP Environmental

0 0.25 0.5 1
km

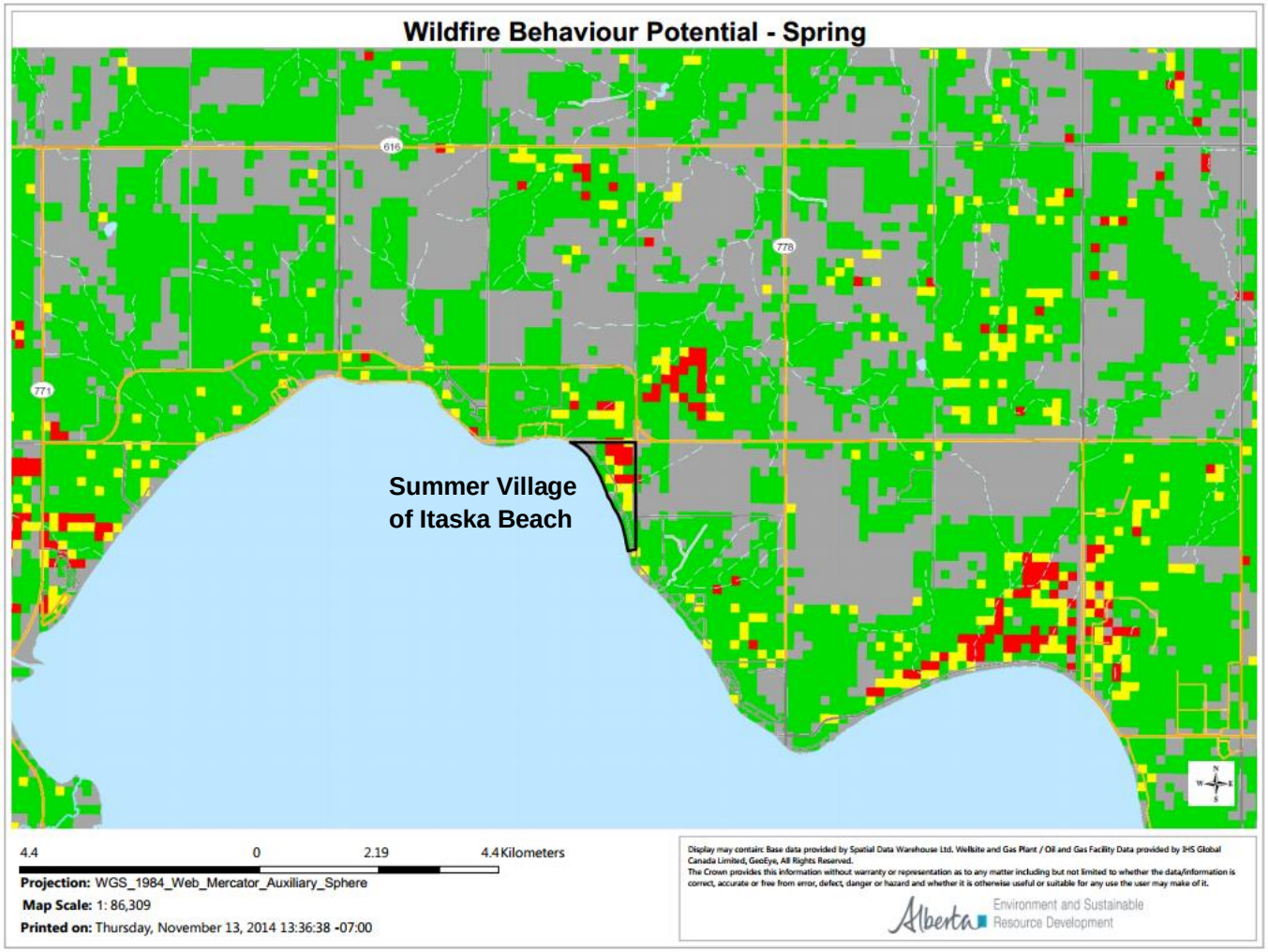
Coordinates system:
NAD 1983 10TM AEP Forest

Date:
April 8, 2015

Prepared by:

CPP ENVIRONMENTAL

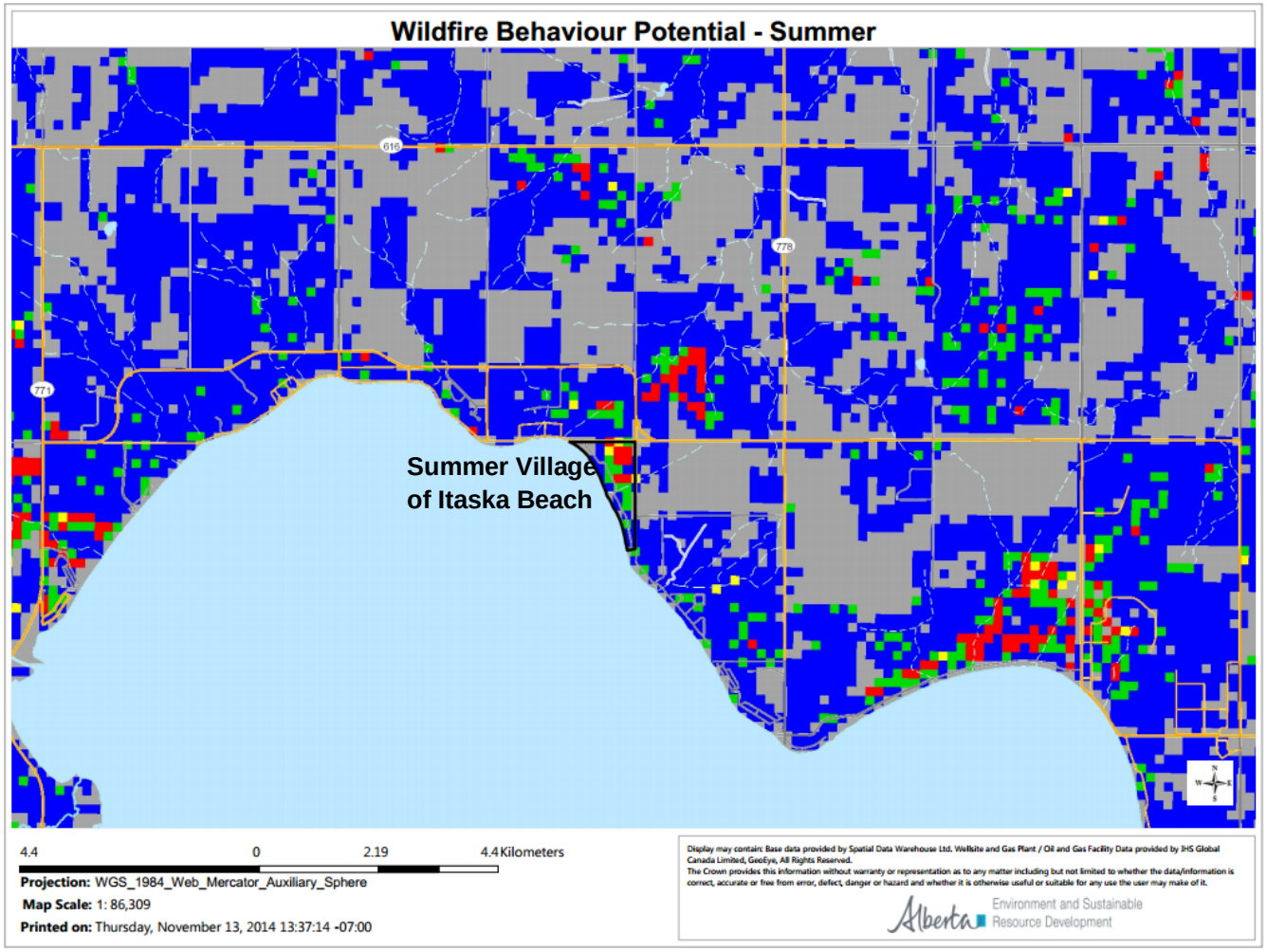
Wildfire Behaviour Potential Maps



Legend

Fire Behaviour Potential

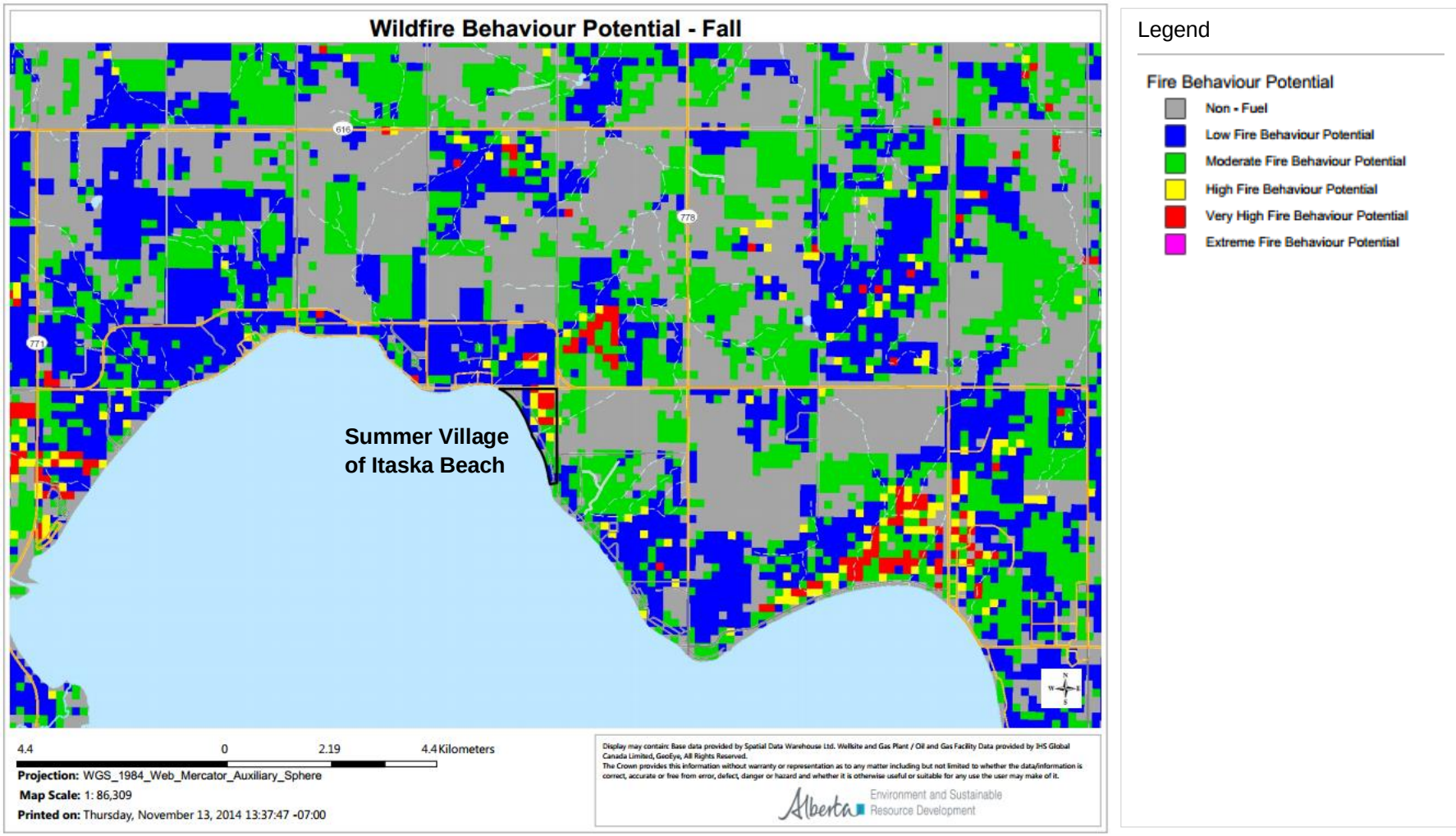
- Non - Fuel
- Low Fire Behaviour Potential
- Moderate Fire Behaviour Potential
- High Fire Behaviour Potential
- Very High Fire Behaviour Potential
- Extreme Fire Behaviour Potential



Legend

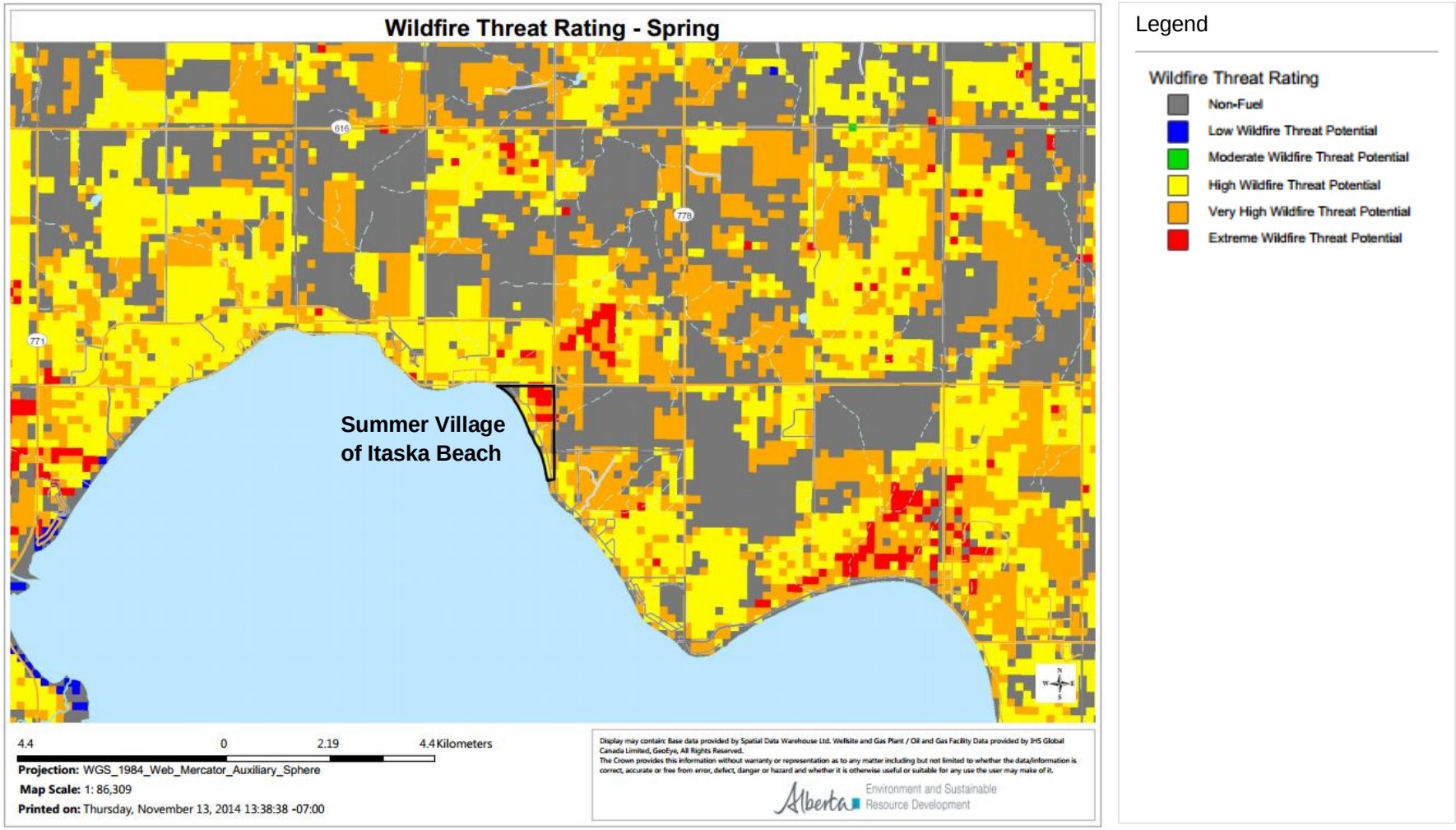
Fire Behaviour Potential

- Non - Fuel
- Low Fire Behaviour Potential
- Moderate Fire Behaviour Potential
- High Fire Behaviour Potential
- Very High Fire Behaviour Potential
- Extreme Fire Behaviour Potential

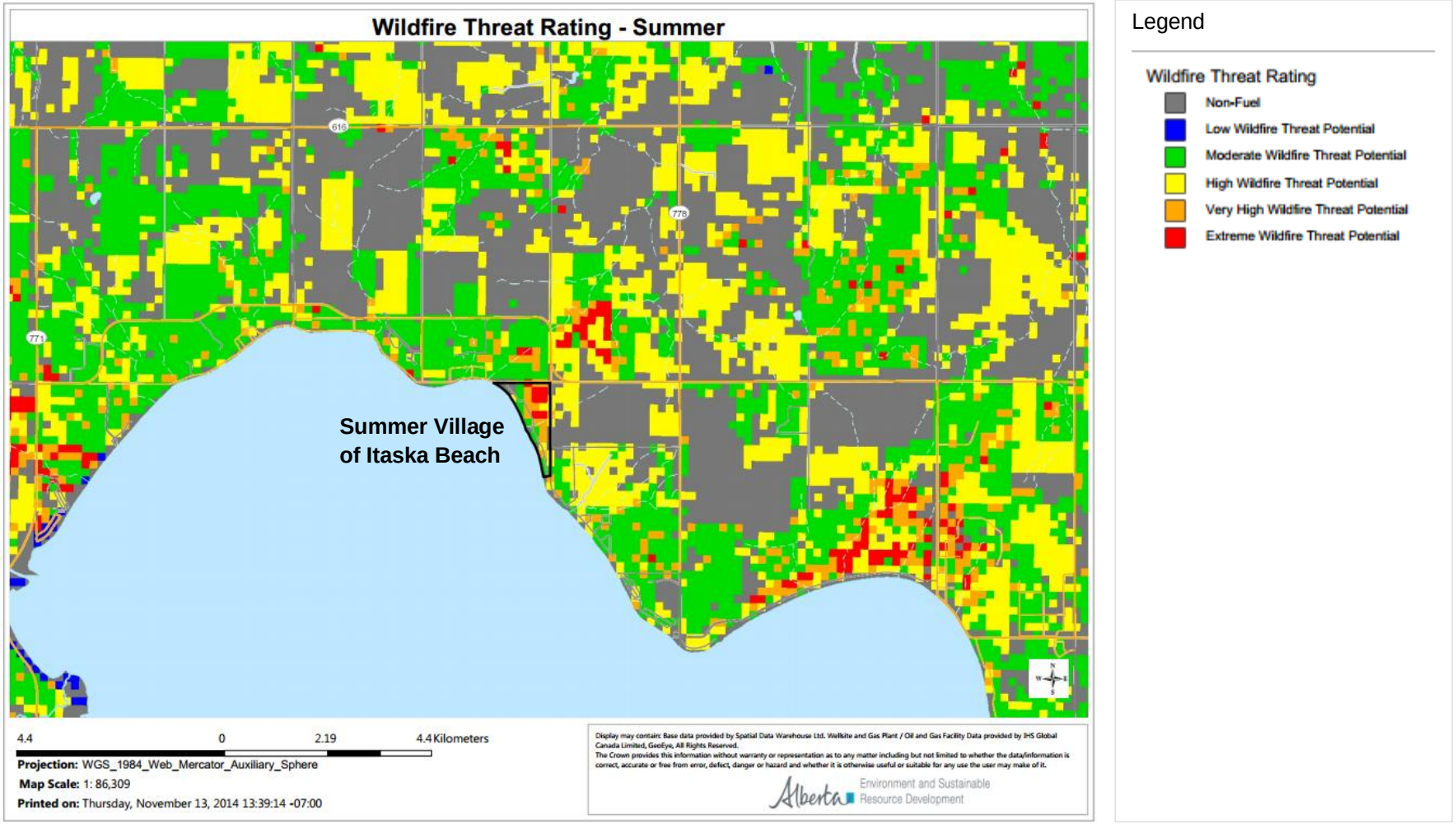


Map 1. Wildfire behaviour potential - fall

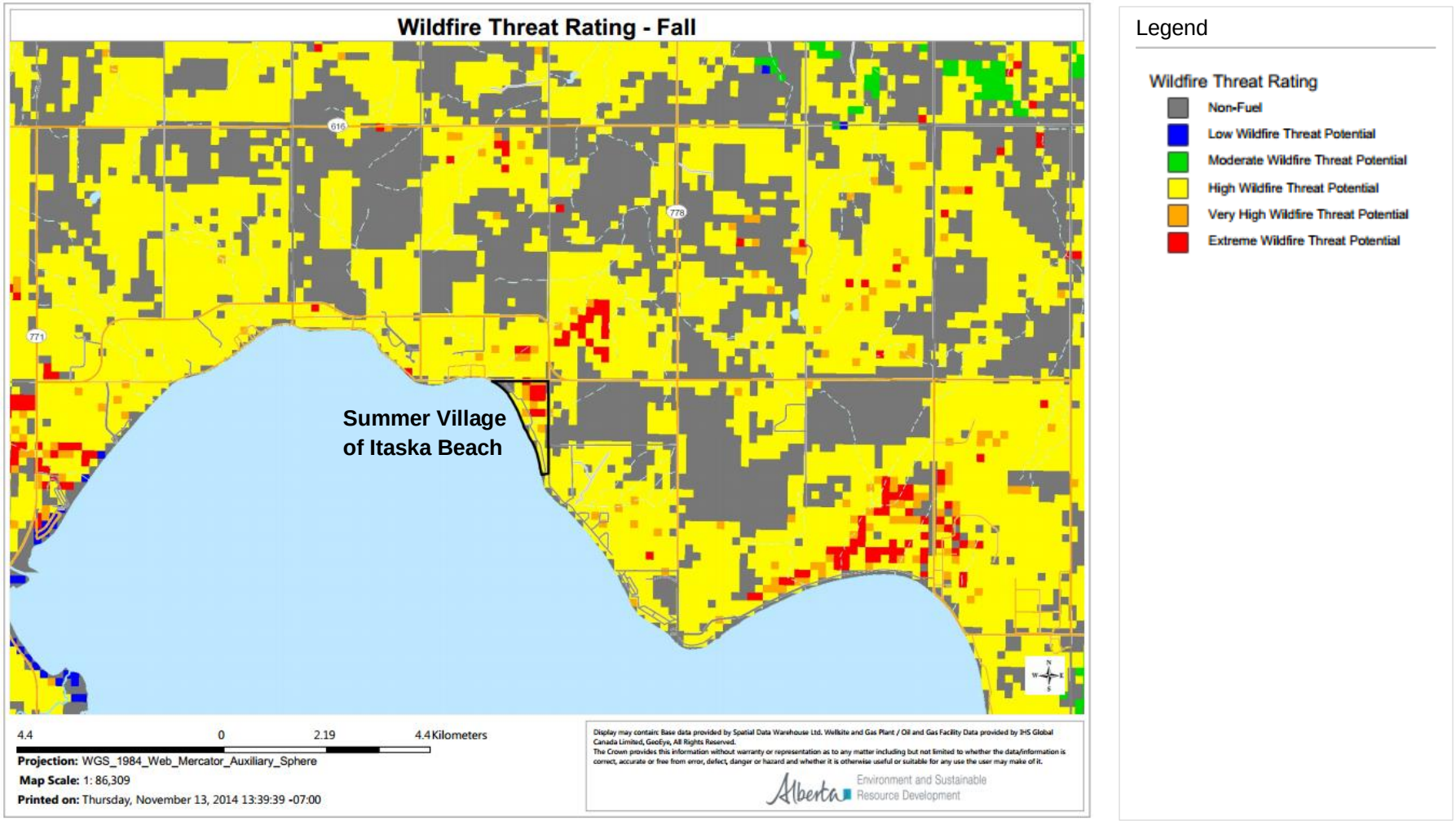
Wildfire Threat Rating Maps



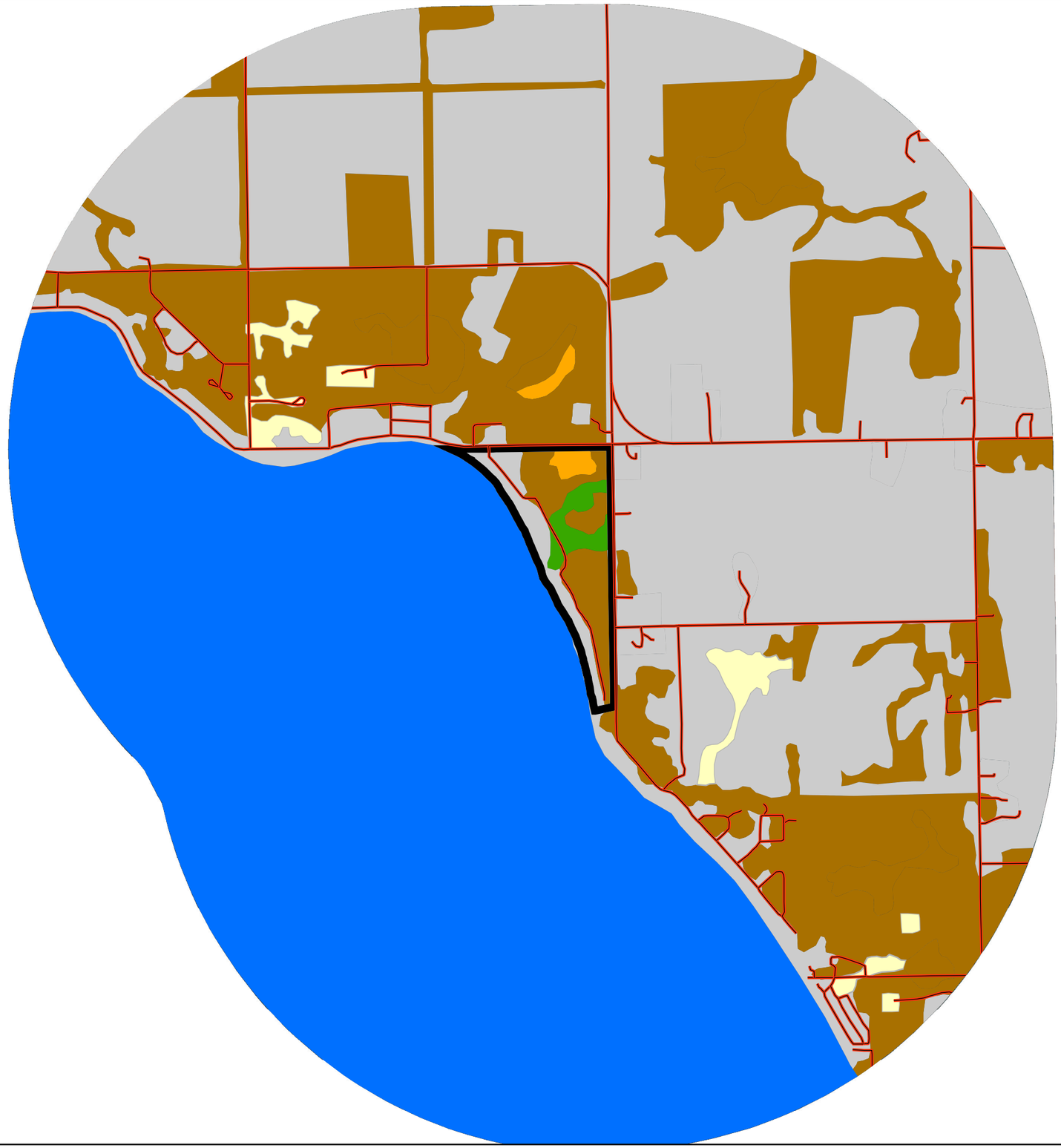
Map 2. Wildfire threat rating - spring



Map 3. Wildfire threat rating - summer



Map 4. Wildfire threat rating - fall



Fuel Types

Itaska Beach
Summer Villages
2015

- Road
- Itaska Beach
- Non Fuel
- Conifer
- Deciduous
- Grass
- Mixedwood
- Water

Source: Altalis

0 0.125 0.25 0.5
km

Coordinates system:
NAD 1983 10TM AEP Forest

Date:
April 16, 2015

Prepared by:
CPP ENVIRONMENTAL

Topographic

Itaska Beach
Summer Villages
2015

Itaska Beach

Source: ESRD, CPP Environmental

0 0.25 0.5 1 km

Coordinates system:
NAD 1983 10TM AEP Forest

Date:
June 16, 2015

Prepared by:
CPP ENVIRONMENTAL

Scenario 1

Itaska Beach
Summer Villages
2015

Itaska Beach

Road

Fire Behavior

- Very Low
- Low
- Moderate
- High
- Very High
- Extreme

Source: Altalis

0 0.1 0.2 0.4 km

Coordinates system:
NAD 1983 10TM AEP Forest

Date:
May 27, 2015

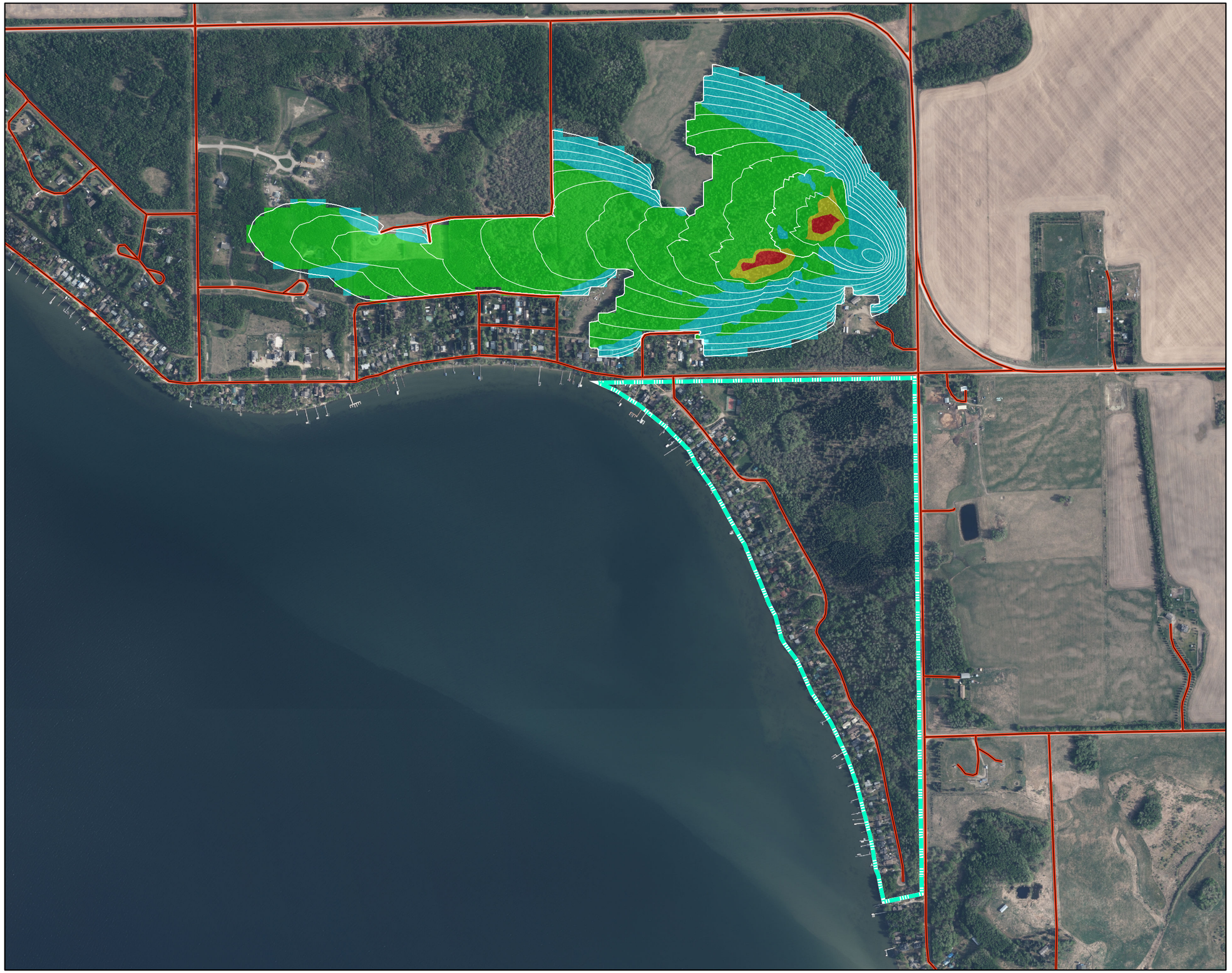
Prepared by:

CPP ENVIRONMENTAL

Scenario 1																		
	Weather Factors				Fire Weather Indicies						Area Consumed		Percent HFI					
Date and Time	Temperature (^{0}C)	Relative Humidity (%)	Wind Direction (deg)	Wind Speed (km/h)	Hourly FFMC	Hourly ISI	Hourly FWI	DMC	DC	BUI	Time Step Area (ha)	Area (ha)	< 10 (kW/m)	10 - 500 (kW/m)	500 - 2000 (kW/m)	2000 - 4000 (kW/m)	4000 - 10000 (kW/m)	> 10000 (kW/m)
5/11/2011 10:00	16.8	30	140	33	84.7	10.7	19.9	19	217	31.2	0	0	0	0	0	0	0	0
5/11/2011 10:30	16.8	30	140	33	84.7	10.7	19.9	19	217	31.2	0	0	0	0	0	0	0	0
5/11/2011 11:00	17.8	30	140	33	87.8	16.5	27.1	19	217	31.2	0	0	0	0	0	0	0	0
5/11/2011 11:30	17.8	30	140	33	87.8	16.5	27.1	19	217	31.2	0	0	0	0	0	0	0	0
5/11/2011 12:00	18.4	26	140	37	90.6	30.1	40.4	19	217	31.2	0	0	0	0	0	0	0	0
5/11/2011 12:30	18.4	26	140	37	90.6	30.1	40.4	19	217	31.2	0	0	0	0	0	0	0	0
5/11/2011 13:00	19.6	27	140	37	89.2	24.6	35.4	23	222.9	36.5	0	0	100	0	0	0	0	0
5/11/2011 13:30	19.6	27	140	37	89.2	24.6	35.4	23	222.9	36.5	0.56	0.56	0	33.33	66.67	0	0	0
5/11/2011 14:00	19.8	24	150	37	89.9	27.2	37.8	23	222.9	36.5	4.66	5.22	0	19.44	68.06	2.78	6.94	2.78
5/11/2011 14:30	19.8	24	150	37	89.9	27.2	37.8	23	222.9	36.5	5.86	11.09	0	17.35	59.82	2.74	10.5	9.59
5/11/2011 15:00	20.5	25	140	37	90.5	29.8	40.1	23	222.9	36.5	8.28	19.36	0	25.73	55.6	17.84	0	0.83
5/11/2011 15:30	20.5	25	140	37	90.5	29.8	40.1	23	222.9	36.5	9.68	29.04	0.39	27.13	59.69	10.47	1.16	1.16
5/11/2011 16:00	20.6	23	140	41	91	39	47.6	23	222.9	36.5	10.24	39.28	0.43	21.7	51.49	26.38	0	0
5/11/2011 16:30	20.6	23	140	41	91	39	47.6	23	222.9	36.5	9.72	49	0.42	32.35	57.14	9.24	0	0.84
5/11/2011 17:00	21	23	140	33	91.6	28.3	38.8	23	222.9	36.5	6.01	55.01	0	45.8	53.78	0	0.42	0
5/11/2011 17:30	21	23	140	33	91.6	28.3	38.8	23	222.9	36.5	4.59	59.6	0	51.57	47.09	1.35	0	0
5/11/2011 18:00	20.5	24	140	33	91	26.2	36.9	23	222.9	36.5	4.27	63.87	0	56.28	43.26	0	0	0.47
5/11/2011 18:30	20.5	24	140	33	91	26.2	36.9	23	222.9	36.5	3.82	67.69	0	63.05	36.95	0	0	0
5/11/2011 19:00	19.7	25	140	30	90.4	20.7	31.5	23	222.9	36.5	3.84	71.52	0	71.78	28.22	0	0	0
5/11/2011 19:30	19.7	25	140	30	90.4	20.7	31.5	23	222.9	36.5	3.22	74.74	0	75	25	0	0	0
5/11/2011 20:00	17.7	28	120	28	89	15.3	25.7	23	222.9	36.5	2.92	77.66	0	71.98	28.02	0	0	0
5/11/2011 20:30	17.7	28	120	28	89	15.3	25.7	23	222.9	36.5	3.7	81.36	0	63.96	36.04	0	0	0
5/11/2011 21:00	16.2	30	130	26	87.7	11.5	21	23	222.9	36.5	3.7	85.06	0	93.31	6.69	0	0	0
5/11/2011 21:30	16.2	30	130	26	87.7	11.5	21	23	222.9	36.5	1.9	86.95	0	91.32	8.68	0	0	0
5/11/2011 22:00	14.7	30	120	24	86.3	8.5	16.8	23	222.9	36.5	2.01	88.97	0	100	0	0	0	0

Scenario 2

Itaska Beach
Summer Villages
2015



Itaska Beach

Road

Fire Behavior

Low

Moderate

High

Very High

Source: Altalis

0 0.1 0.2 0.4
km

Coordinates system:
NAD 1983 10TM AEP Forest

Date:
May 27, 2015

Prepared by:

CPP ENVIRONMENTAL

Scenario 2																		
	Weather Factors				Fire Weather Indicies						Area Consumed		Percent HFI					
Date and Time	Temperature (^{0}C)	Relative Humidity (%)	Wind Direction (deg)	Wind Speed (km/h)	Hourly FFMC	Hourly ISI	Hourly FWI	DMC	DC	BUI	Time Step Area (ha)	Area (ha)	< 10 (kW/m)	10 - 500 (kW/m)	500 - 2000 (kW/m)	2000 - 4000 (kW/m)	4000 - 10000 (kW/m)	> 10000 (kW/m)
4/21/2005 10:00	17.2	34	80	20	83.6	4.8	12.3	28.3	204.5	42	0	0	0	0	0	0	0	0
4/21/2005 10:30	17.2	34	80	20	83.6	4.8	12.3	28.3	204.5	42	0	0	0	0	0	0	0	0
4/21/2005 11:00	19.2	31	100	15	86.8	5.8	14.3	28.3	204.5	42	0	0	0	0	0	0	0	0
4/21/2005 11:30	19.2	31	100	15	86.8	5.8	14.3	28.3	204.5	42	0	0	0	0	0	0	0	0
4/21/2005 12:00	20.1	29	110	15	90.1	9.2	20.2	28.3	204.5	42	0	0	100	0	0	0	0	0
4/21/2005 12:30	20.1	29	110	15	90.1	9.2	20.2	28.3	204.5	42	0.11	0.11	0	81.25	18.75	0	0	0
4/21/2005 13:00	20.9	27	130	17	89.1	8.9	19.7	32.2	209.3	46.5	0.51	0.62	0	72.73	27.27	0	0	0
4/21/2005 13:30	20.9	27	130	17	89.1	8.9	19.7	32.2	209.3	46.5	1.49	2.11	0	53.13	37.5	9.38	0	0
4/21/2005 14:00	21.1	27	100	13	89.8	8.1	18.3	32.2	209.3	46.5	2.12	4.22	0	93.48	3.26	3.26	0	0
4/21/2005 14:30	21.1	27	100	13	89.8	8.1	18.3	32.2	209.3	46.5	0	4.22	0	93.48	3.26	3.26	0	0
4/21/2005 15:00	21.2	26	100	19	90.5	12	24.3	32.2	209.3	46.5	0	4.22	0	41.3	55.43	0	3.26	0
4/21/2005 15:30	21.2	26	100	19	90.5	12	24.3	32.2	209.3	46.5	4.32	8.54	0	41.55	58.45	0	0	0
4/21/2005 16:00	21.1	27	100	17	91	11.6	23.8	32.2	209.3	46.5	4.03	12.57	0	60.28	39.72	0	0	0
4/21/2005 16:30	21.1	27	100	17	91	11.6	23.8	32.2	209.3	46.5	3.77	16.34	0	63.38	36.62	0	0	0
4/21/2005 17:00	20.7	26	90	19	91.5	13.9	27	32.2	209.3	46.5	3.98	20.32	0	60.14	39.86	0	0	0
4/21/2005 17:30	20.7	26	90	19	91.5	13.9	27	32.2	209.3	46.5	5.18	25.5	0	63.46	36.54	0	0	0
4/21/2005 18:00	19.8	29	90	19	91	12.8	25.6	32.2	209.3	46.5	5	30.49	0	68.71	31.29	0	0	0
4/21/2005 18:30	19.8	29	90	19	91	12.8	25.6	32.2	209.3	46.5	4.14	34.63	0	76.34	23.66	0	0	0
4/21/2005 19:00	18.1	32	100	19	90.4	11.8	24.1	32.2	209.3	46.5	4.1	38.73	0	82.88	17.12	0	0	0
4/21/2005 19:30	18.1	32	100	19	90.4	11.8	24.1	32.2	209.3	46.5	3.54	42.27	0	77.85	22.15	0	0	0
4/21/2005 20:00	15.4	36	110	15	89	7.9	18	32.2	209.3	46.5	3.84	46.11	0	100	0	0	0	0
4/21/2005 20:30	15.4	36	110	15	89	7.9	18	32.2	209.3	46.5	0	46.11	0	100	0	0	0	0
4/21/2005 21:00	14.5	39	130	15	87.7	6.5	15.7	32.2	209.3	46.5	0	46.11	0	100	0	0	0	0
4/21/2005 21:30	14.5	39	130	15	87.7	6.5	15.7	32.2	209.3	46.5	0	46.11	0	100	0	0	0	0
4/21/2005 22:00	12.8	43	130	13	86.3	4.8	12.4	32.2	209.3	46.5	0	46.11	0	100	0	0	0	0

Alberta Environment and Sustainable Resource Development

FireSmart Canada

Name		Date	
Address		Phone	

Qtr		Sec		Twp		Rge		West		Meridian	GPS	

STRUCTURE AND SITE HAZARD ASSESSMENT FORM

	Factor	Page	Characteristics and Point Ratings					Score
1	Roofing Materials	2~5	Metal, tile, asphalt, ULC-rated shakes or non-combustible material			Unrated wood shakes		
			0			30		
2	Roofing Cleanliness	2~6	No combustible material	Scattered combustible Materials, <1cm in depth		Clogged gutter, combustible material > 1cm in depth		
			0	2		3		
3	Building Exterior	2~7	Non-combustible stucco or metal siding	Log, heavy timbers		Wood or vinyl siding or wood shake		
			0	1		6		
4	Eaves, vents and openings	2~8	Closed eaves, vents screened with 3mm mesh and accessible	Closed eaves, vents not screened with 3mm mesh		Open eaves, vents not screened, debris accumulation		
			0	1		6		
5	Balcony, desk, or porch	2~9	None, or fire-resistant material sheathed in	Combustible material, sheathed in		Combustible material, not sheathed in		
			0	2		6		
6	Window and door glazing	2~10	Tempered	Double Pane		Single Pane		
				Small/Med	Large	Small/Med	Large	
			0	1	2	2	4	
7	Location of nearby combustibles	2~11	None or > 10 m from structure			< 10 m from structure		
			0			6		
8	Setback from edge of slope	2~12	Adequate			Inadequate		
			0			6		
9	Forestry Vegetation (overstory)	2~14	Deciduous	Mixed Wood		Coniferous		
						Separated	Continuous	
	< 10 meters		0	30		30	30	
	10 - 30 meters		0	10		10	30	
10	Surface vegetation	2~16	Lawn or non-combustible material	Wild grass or shrubs		Dead and down woody material		
						Scattered	Abundant	
	< 10 meters		0	30		30	30	
	10 - 30 meters		0	5		5	30	
11	Ladder fuels 10-30 meters	2~17	Absent	Scattered		Abundant		
			0	5		10		
	Hazard Level		Low < 21 points	Moderate 21 -29 points		**Total Score for Factors 1-11**		0
			High 30-35 points	Extreme >35 points		**Structure and Site Hazard Level**		

AREA HAZARD ASSESMENT FORM

	Factor	Page	Characteristics and Point Ratings					Score
12	Forestry Vegetation (overstory)	2~18	Deciduous	Mixed Wood		Coniferous		
						Separated	Continuous	
			0	15		15	30	
13	Surface vegetation	2~18	Lawn or non-combustible material	Wild grass or shrubs		Dead and down woody material		
						Scattered	Abundant	
			0	5		5	15	
14	Ladder fuels	2~18	Absent	Scattered		Continuous		
			0	5		10		
15	Slope	2~19	0 - 10%	10 - 25%		>25%		
				Even	Gullied	Even	Gullied	
			0	4	5	8	10	
16	Position on slope	2~20	Valley bottom or lower slope	Mid-slope		Upper-slope		
			0	3		5		
	Hazard Level		Low < 21 points	Moderate 21 -29 points		**Total Score for Factors 12-16**		0
			High 30-35 points	Extreme >35 points		**Area Hazard Level**		

Remarks

Copy - WMB Copy - Home Owner

Risk Assessment

Wildfire Risk Assessment For Rural Communities						
COMMUNITY:	Itaska Beach	INHERENT		STRATEGIES TO OBTAIN RESIDUAL RISK	RESIDUAL	
		Rating	Scores		Rating	Scores
ACCESS TO SAFE ZONES	A Lake	0 or 3	0	No Change	0 or 3	0
	B Large Non-Fuel Surface	0 or 3	3		0 or 3	3
	C Cleared Area (Vegetation Maintained)	0 or 3	0		0 or 3	0
	D County Road	0 or 3	0		0 or 3	0
	E Subdivision Road	0 or 3	0		0 or 3	0
		/15	3		/15	3
NUMBER OF HOMES	A 0 to 30	1	3	No Change	1	3
	B 31 to 60	2			2	
	C 61 to 90	3			3	
	D 91 to 120	4			4	
	E > 120	5			5	
		/5	3		/5	3
ECONOMIC RISK	Average Property Value:					
	A $0 - $300 000	1	3	No Change	1	3
	B $300 001 - $500 000	2			2	
	C $500 001 - $750 000	3			3	
	D > $750 000	4			4	
	Avg Home Cost: $ 609 600					
		/4	3		/4	3
VALUES AT RISK	Presence of:					
	A Critical Infrastructure	0 or 3	0	No Change	0 or 3	0
	B Dangerous Goods Infrastructure	0 or 3	3		0 or 3	3
	C Special Values	0 or 3	3		0 or 3	3
		/9	6		/9	6
POLITICAL RISK	A Local media involvement and no structural impact to Emergency Services or programs	1	2	Review and adjust bylaw	1	1
	B Local media involvement and internal structural changes to Emergency Services or programs	2			2	
	C Regional media involvement, lack of public confidence, and external changes to Emergency Services or county	3			3	
		/3	2		/3	1

DEFENSIBILITY OF COMMUNITY	DENSITY OF STRUCTURES	A < 20 m between homes	3	3		3	3
		B 21 - 40 m between homes	2			2	
		C 41 - 100 m between homes	1		No Change	1	
		D > 100m between homes	0			0	
			/3	3		/3	3
	BARRIERS TO FIRE SPREAD	A East w/ Barrier within 200m	0 or 2	0		0 or 2	0
		B West w/ Barrier within 200m	0 or 4	0		0 or 4	0
		C South w/ Barrier within 200m	0 or 4	0	No Change	0 or 4	0
		D North w/ Barrier within 200m	0 or 2	0		0 or 2	0
			/12	0		/12	0
	FOREST FUEL PATCH SIZE	A No forest patch present within community	0			0	
		B Patch 0.1 - 0.9 ha within community boundary	1			1	
		C Patch 1 - 2.9 ha within community boundary	3		No Change	3	
		D Patch > 3 ha within community boundary	5	5		5	5
			/5	5		/5	5
	RESIDENTIAL FIRESMART	A 0-20 %	4			4	
		B 21-40 %	3			3	
		C 41-60 %	2	2	Adoption of FireSmart by	2	
		D 61-80 %	1		all residents in community	1	
		E 81-100 %	0			0	0
			/4	2		/4	0
	FUEL MAIN-TENANCE REQUIRED	A Utility ROW maintenance	0 or 1	0	The county clear the right-	0 or 1	0
		B Fuel maintenance required - other agency	0 or 1	0	of-ways on their land	0 or 1	0
		C Fuel maintenance required - municipality	0 or 1	1		0 or 1	0
			/3	1		/3	0
	ACCESS	A Loop turnarounds/ cul-de-sacs are suitable for large fire apparatus without back-up	0 or 1	0	Develop an emergency access	0 or 1	0
		B 2 or more means of egress	0 or 1	1		0 or 1	0
		C Standard visible lot signage	0 or 1	0		0 or 1	0
			/3	1		/3	0
	SUPPRESSION CAPABILITY	A Responding Fire Department has proper equipment for bush fires	0 or 1	0		0 or 1	0
		B Fire fighters have basic wildfire fighting trainin	0 or 1	1	Not all fire fighters have proper training	0 or 1	0
		C Mutual Aid Agreements are present	0 or 1	0		0 or 1	0
			/3	1		/3	0
			TOTAL:	30		TOTAL:	24

Wildfire Risk Assessment For Rural Communities

COMMUNITY:		Itaska Beach		INHERENT		STRATEGIES TO OBTAIN RESIDUAL RISK	RESIDUAL	
				Rating	Scores		Rating	Scores
LIKELIHOOD OF OCCURRENCE	FUEL TYPES	A D Fuels - Deciduous		0 or 1	1	No Change	0 or 1	1
		B O Fuels - Grasses		0 or 2	0		0 or 2	0
		C M Fuels - Mixedwood		0 or 3	3		0 or 3	3
		D C Fuels - Patchy conifer		0 or 2	2		0 or 2	2
		E C Fuels - Conifer		0 or 4			0 or 4	
				/10	6		/10	6
	SLOPE & FUEL TYPE	VAR on or within 100 m of the top crest of a sustained slope Fuel Type: N/A Slope % : N/A		0 to 6	0	No Change	0 to 6	0
				/6	0		/6	0
	FUEL STRUCTURE – DEAD & DOWN	A Absent- No dead or down material		0		No Change	0	
		B Scattered- 3-5m separating logs, branches &		1	1		1	1
		C Abundant-Continuous logs, branches & twigs		3			3	
				/3	1		/3	1
	FUEL STRUCTURE – LADDER FUEL	A Absent- <25% of trees have ladder fuels		0	0	No Change	0	0
		B Scattered- 25% - 75% of trees have ladder		3			3	
		C Abundant- > 75% of trees have ladder fuels		5			5	
				/5	0		/5	0
	PRESENT LANDSCAPE IGNITION SOURCES	A Recreation (Presence)		0 or 1	0	No Change	0 or 1	0
		B Overhead Utility Line adjacent to forest		0 or 1	1		0 or 1	1
		C < 1 km from primary/secondary roadway		0 or 1	1		0 or 1	1
		D < 1km from railway		0 or 1	0		0 or 1	0
				/4	2		/4	2
	RESIDENTIAL BURNING TYPES ALLOWED	A Incinerator Fires		0 or 1	1	No Change	0 or 1	1
		B Open Fires		0 or 1	0		0 or 1	0
		C Backyard Fire Pits - Standard Design		0 or 1	1		0 or 1	1
				/3	2		/3	2
	PROBABILITY OF EXTREME FIRE BEHAVIOR	A 90th Percentile of FWI > 30		4		No Change	4	
		B 90th Percentile of FWI > 17		3			3	
		C 90th Percentile of FWI > 9		2	2		2	2
		D 90th Percentile of FWI < 9		1			1	
				/4	2		/4	2
	Consequence x Likelihood = INHERENT RISK		390	TOTAL:	13		TOTAL:	13
	Consequence x Likelihood = RESIDUAL RISK		312					

		Wildfire Risk Matrix																	
		Likelihood																	
		1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35
Consequence	3	3	9	15	21	27	33	39	45	51	57	63	69	75	81	87	93	99	105
	6	6	18	30	42	54	66	78	90	102	114	126	138	150	162	174	186	198	210
	9	9	27	45	63	81	99	117	135	153	171	189	207	225	243	261	279	297	315
	12	12	36	60	84	108	132	156	180	204	228	252	276	300	324	348	372	396	420
	15	15	45	75	105	135	165	195	225	255	285	315	345	375	405	435	465	495	525
	18	18	54	90	126	162	198	234	270	306	342	378	414	450	486	522	558	594	630
	21	21	63	105	147	189	231	273	315	357	399	441	483	525	567	609	651	693	735
	24	24	72	120	168	216	264	312	360	408	456	504	552	600	648	696	744	792	840
	27	27	81	135	189	243	297	351	405	459	513	567	621	675	729	783	837	891	945
	30	30	90	150	210	270	330	390	450	510	570	630	690	750	810	870	930	990	1050
	33	33	99	165	231	297	363	429	495	561	627	693	759	825	891	957	1023	1089	1155
	36	36	108	180	252	324	396	468	540	612	684	756	828	900	972	1044	1116	1188	1260
	39	39	117	195	273	351	429	507	585	663	741	819	897	975	1053	1131	1209	1287	1365
	42	42	126	210	294	378	462	546	630	714	798	882	966	1050	1134	1218	1302	1386	1470
	45	45	135	225	315	405	495	585	675	765	855	945	1035	1125	1215	1305	1395	1485	1575
	48	48	144	240	336	432	528	624	720	816	912	1008	1104	1200	1296	1392	1488	1584	1680
	51	51	153	255	357	459	561	663	765	867	969	1071	1173	1275	1377	1479	1581	1683	1785
	54	54	162	270	378	486	594	702	810	918	1026	1134	1242	1350	1458	1566	1674	1782	1890
	57	57	171	285	399	513	627	741	855	969	1083	1197	1311	1425	1539	1653	1767	1881	1995
	60	60	180	300	420	540	660	780	900	1020	1140	1260	1380	1500	1620	1740	1860	1980	2100
	63	63	189	315	441	567	693	819	945	1071	1197	1323	1449	1575	1701	1827	1953	2079	2205
	66	66	198	330	462	594	726	858	990	1122	1254	1386	1518	1650	1782	1914	2046	2178	2310
	69	69	207	345	483	621	759	897	1035	1173	1311	1449	1587	1725	1863	2001	2139	2277	2415
	70	70	210	350	490	630	770	910	1050	1190	1330	1470	1610	1750	1890	2030	2170	2310	2450

Hazard Rating	
Low	
Moderate	
High	
Extreme	

CPP ENVIRONMENTAL