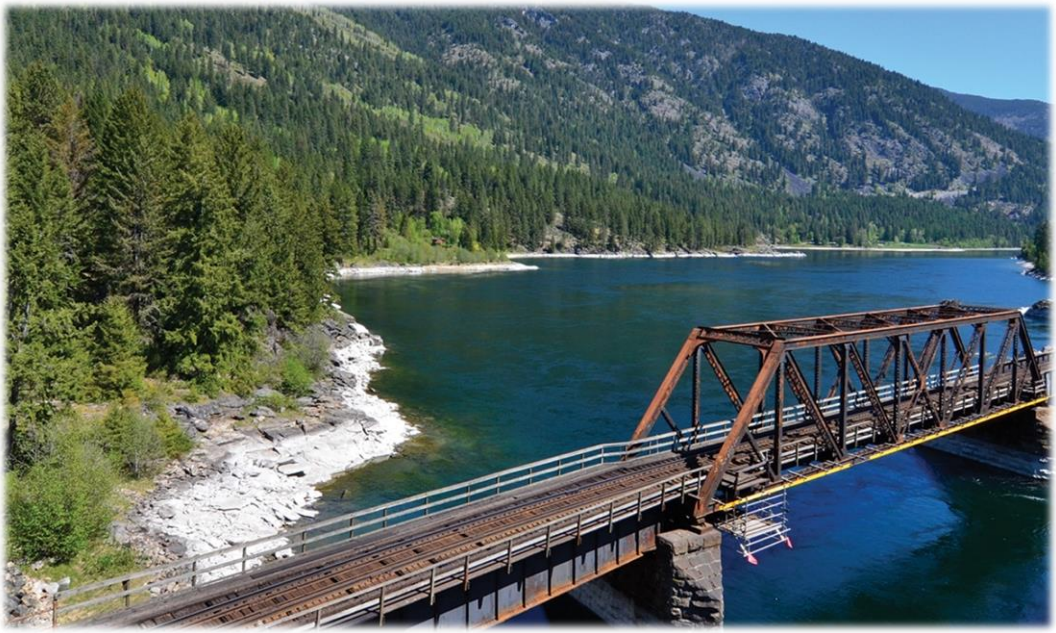
Community Wildfire Resiliency Plan



Regional District of Central Kootenay
Electoral Area F

December 20, 2023

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REGISTERED PROFESSIONAL SIGN AND SEAL

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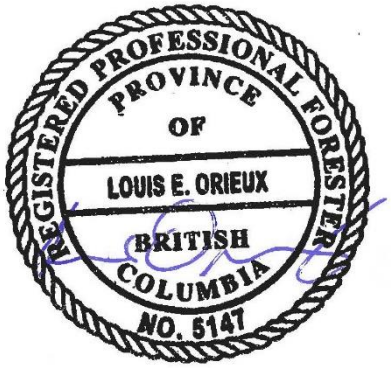
December 18, 2023	
I certify that the work described herein fulfills the standards expected of a member of the Association of British Columbia Forest Professionals and that I did personally supervise the work.	
Registered Professional Forester Signature and Seal	
	

Cover Photo: Tagum rail bridge. Accessed from:
https://www.nelsonkootenaylake.com/listing/taghum-bridge

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- Tom Newell (RDCK Director for Area F)
- Nora Hannon (RDCK Disaster Mitigation and Adaptation Senior Advisor)
- Dan Seguin (RDCK Manager Community Sustainability)

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EXECUTIVE SUMMARY

In June 2023, B.A. Blackwell and Associates Ltd. was retained by the Regional District of Central Kootenay (RDCK) to assist Electoral Area F (EA-F) in developing a new Community Wildfire Resiliency Plan (CWRP). A CWRP is both a localized risk assessment and an action plan to improve wildfire resiliency within EA-F's Wildland-Urban Interface (WUI). This plan replaces the previous Community Wildfire Protection Plan (CWPP) completed for EA-F in 2016, accounting for changes that have occurred in the last seven years and taking advantage of the newest community wildfire planning framework in BC. The CWRP is founded on the application of the seven FireSmart™ disciplines (Education, Legislation and Planning, Development Considerations, Interagency Cooperation, Cross-training, Emergency Planning, and Vegetation Management).

EA-F has made full or partial progress with 12 of 37 of the 2016 CWPP recommendations. The recommendations addressed primarily related to delivering public FireSmart and wildfire education and prescribing and implementing proposed treatment units. As the Electoral Area's communities (and associated WUI) are spread out over a significant distance along the northern shores of northern Kootenay Lake and Kootenay River, community wildfire resiliency is strongly tied to the actions of the communities and their residents, the Provincial government, and the relevant stakeholders managing the timber harvest land base. Having Local Government and local volunteer fire department Fire Chiefs participating in a local and or regional Community FireSmart Resiliency Committee will be essential to implementing this plan and achieving effective wildfire risk reduction throughout EA-F.

EA-F's WUI communities are all in a provincially defined Wildland Urban Interface polygon that has a Risk Class of "1", which reflects the highest wildfire risk rating. The Provincial Strategic Threat Analysis assigns a "High" or "Extreme" threat rating to much of the surrounding area. Fieldwork for this CWRP allowed for verified and updated fuel types and wildfire threat assessments to be combined with an office-based analysis to provide a local wildfire risk assessment for the communities. The local analysis determined that, for the assessable area, 62% of EA-F's WUI is classified as a high or extreme fire behavior threat, which largely reflects it being dominated by steeper middle and upper slopes on southerly aspects with conifer-dominated fuel types. The analysis cannot be performed on private land, which covers approximately 42% of EA-F's WUI. This highlights the need to implement risk mitigation programs on private land if community resilience is to be achieved. Conditions on private land can often result in the fire hazard being much higher than in the forest adjacent if there is low compliance with FireSmart principles – which is an issue that was frequently observed through field work. It is important to recognize that in WUI fires, wildland fuels (trees, shrubs, branches, etc.) are not the only fuel available to the fire – houses and their exterior construction materials and landscaping vegetation, cars, barbeque propane tanks, and more (anything that is flammable or combustible) is available fuel.

Rural areas without fire services, or dependent upon small volunteer fire services, rely heavily on the coordination of local resources and the uptake of FireSmart initiatives to be prepared for a wildfire event. It has been found that during extreme wildfire events, most home destruction has been a result of low-intensity surface fire flame exposures, usually ignited by flying embers (firebrands). Firebrands can be transported long distances ahead of the wildfire, across fire guards and fuel breaks, and accumulate in

densities that can exceed 600 embers per square meter. Combustible materials found on the exterior of and surrounding homes (the FireSmart Home Ignition Zone) combine to provide fire pathways allowing spot surface fires ignited by embers to spread and carry flames or smoldering fire into contact with structures.

Because ignitability of structures and landscaping vegetation is the main factor driving structure loss, the intensity and rate of spread of wildland fires beyond the community has not been found to necessarily correspond to loss potential. For example, FireSmart homes with low ignitability may survive high-intensity fires, whereas highly ignitable homes may be destroyed during lower intensity surface fire events. Increasing ignition resistance would reduce the number of homes simultaneously on fire; extreme wildfire conditions do not necessarily result in WUI fire disasters.[1] It is for this reason that the key to reducing WUI fire structure loss is to reduce structure ignitability. Mitigation responsibility must be centered on structure owners, with support from Local Government.

EA-F's WUI communities can be considered as largely interface[2], with areas/neighbourhoods of intermix.[3] Wildfire poses a threat to the communities from either a human ignition (which can happen almost anywhere – forest trail, highway, backyard), or lightning ignition (most often in the adjacent forests near high points of land), but also from a residential fire that then spreads into surrounding vegetation and landscaping. Because of the rural character, remote or isolated locations, and the observed low adherence to FireSmart residential vegetation management and exterior building materials for many structures within EA-F, an emphasis on FireSmart education and FireSmart residential risk reduction policies is made within this Plan. Risk communication, education on the range of available activities, and prioritization of activities should help homeowners to feel empowered to complete simple risk reduction activities on their property. Additional emphasis is placed upon the Provincial government and local timber harvest land base stakeholders to manage potentially hazardous fuel conditions within EA-F's WUI – either through fuel treatments recommended as part of this plan, or by using appropriately targeted harvesting and slash management practices.

A total of 44 recommendation and action items are presented in Table 1 within this Executive Summary and are more thoroughly discussed in their appropriate sections within this Plan. Ultimately, the recommendation and action items within this Plan should be considered as a toolbox of options to help reduce the wildfire risk and consequence to communities with EA-F. RDCK and EA-F will have to further prioritize implementation based on resources, strengths, constraints, and availability of funding, and regularly update the prioritization and course of actions as variables change over time.

This Plan was developed concurrently with CWRPs for adjacent RDCK Electoral Areas D, E, and I. As such, there are synergies between these plans that should be utilized and capitalized upon, such as

[1] Calkin, D., J. Cohen, M. Finney, M. Thompson. 2014. *How risk management can prevent future wildfire disasters in the wildland-urban interface*. Proc Natl Acad Sci U.S.A. Jan 14; 111(2): 746-751. Accessed online 1 June, 2016 at http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3896199/.

[2] Homes and structures are largely situated adjacent to vegetated/forested landscapes surrounding the community/neighbourhood.

[3] Homes and structures are largely situated within the vegetated/forested landscape.

similar/matching recommendations, adjacent or adjoining proposed fuel treatment units, and overlapping fire department response areas.

Table 1: EA-F's Community Wildfire Resiliency Action Plan

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
Education - Section 5.2							
Residents							
1	High	Continue to apply for funding and employ an EA-F FireSmart Coordinator/Mitigation Specialist.	To provide a continuous, local FireSmart program, delivered by local professionals with local knowledge and connections, to their community. Having a FireSmart Coordinator will provide a lead person with dedicated time to coordinate, manage, and implement the program, especially as it grows.	RDCK	2 years	EA-F has its own FireSmart program being managed by a local FireSmart Coordinator.	CRI FCFS up to cost maximums.
2	High	RDCK FireSmart Coordinators should plan regular meetings to discuss their successes, failures, and learnings. Consider adding, or having specific meetings with, FireSmart Community Neighbourhood Champions.	So that they can continue to improve the RDCK's FireSmart program and tailor it to their respective communities. Adding in Community Champions will allow them to further support their EA's communities, as well as get FireSmart messaging and opportunities back into the communities faster.	FireSmart Coordinators (RDCK)	ASAP and ongoing	RDCK FireSmart Coordinators are meeting more than once a year.	CRI FCFS funding as part of FireSmart Coordinator salaries.
3	High	Continue to promote FireSmart to EA-F residents at community events, public spaces, and through workshops using FireSmart branded material and printed manuals (Home and Landscaping) and/or a FireSmart Canada Community Preparedness Day. Show a united front by having local government, fire department members, and FireSmart coordinators at events together as much as possible.	Observed adherence and uptake of FireSmart principles on private property and many homes/structures in EA-F is lacking. Landscaping (conifer hedges), firewood and combustible materials storage, and external building materials are the biggest issues. FireSmart BC resources help present a unified message. Print resources are popular and easy to distribute. FireSmart branded tents, banners, and t-shirts can be purchased with CRI FCFS funding.	EA-F / RDCK	Annually	Quantity of resources distributed/number of times used at events.	CRI FCFS up to cost maximums.
4	High	Update RDCK's FireSmart webpage with the most recent FireSmart graphics and language. Provide links to the current fire danger rating, or better yet, have that posted on the front of this page (making sure to keep it updated during the fire season).	To continue to provide to most recent and up to date FireSmart information, language, and principles to residents (and visitors).	RDCK	Annually	RDCK FireSmart webpage is showing current FireSmart information and graphics.	CRI FCFS up to cost maximums.

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
5	High	Continue the FireSmart social media campaign, with updated FireSmart graphics and language, through various RDCK/EA-F social media platforms (i.e., Facebook, Twitter, Instagram), including those from Volunteer Fire Departments (VFDs).	To promote FireSmart information to residents (and visitors). Include links to graphics, videos, pdf information/pamphlet downloads, etc.	EA-F / RDCK	Annually	An organized FireSmart social media campaign is delivered throughout RDCK.	CRI FCFS up to cost maximums.
6	High	Continue to promote FireSmart in EA-F schools using the FireSmart Education Kit and other resources.	Great success has been made through BC schools with FireSmart outreach. Engaging with the community's younger population may increase uptake with all residents.	RDCK / School District 8	Annually	One FireSmart lesson delivered each year (minimum).	CRI FCFS; e.g. FireSmart Magnetic Board for $1,710.
7	High	Continue to promote free FireSmart Home Ignition Zone assessments and/or Home Partners Program assessments to residents.	FireSmart Home Ignition zone and Home Partners Program assessments introduce residents to FireSmart, its principles, fire and wildfire risks associated with their home and property, and how they can be mitigated. These assessments are primarily an educational exercise, and can be funded completely through CRI FCFS. They are a requirement to qualify for the FireSmart rebate program (see Section 5.7).	EA-F / RDCK	2 years	FireSmart Home Ignition Zone assessments are being completed within EA-F.	CRI FCFS up to cost maximums.
8	Moderate	Consider door-to-door knocks in neighbourhoods (such as Pass Creek) that have communication constraints to discuss wildfire risk and FireSmart principles that they can apply to their home and property.	Although wildfire can affect all areas of EA-F's WUI, some communities are more at risk due to risks/constraints not associated to wildfire – such as no cell service and low community turnouts at public FireSmart events. Door to door knocks by Fire Chiefs, fire department personnel, and FireSmart Coordinators have been successful in other communities.	RDCK / EA-F VFDs / FireSmart Coordinators	2 years	Visits to homes in these WUI neighbourhoods from local government/ FireSmart/ fire department members (with FireSmart information left at their door) have started.	In-house personnel time. CRI FCFS for FireSmart materials.

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
9	Moderate	Increase public awareness of this Community Wildfire Resiliency Plan.	Increasing awareness of wildfire risk also increases community resiliency through household emergency planning, and support for FireSmart.	EA-F / RDCK	1 year from CWRP completion	Awareness by residents - consider a survey.	Staff time to update website, and media posts. Newspaper ads ~$300 each.
Visitors							
10	High	Lobby BC Parks to install FireSmart educational signage at all BC Park camp and recreation sites within EA-F, starting at Kokanee Creek. RDCK should follow suit for all regional parks.	These signs provide both visitors and residents a quick snapshot of how their actions and activities can inadvertently increase wildfire and ignition risks, as well as introduces visitors to FireSmart – a message they can take home with them.	EA-F / RDCK / BC Parks	5 years (signs installed)	Wildfire risk signs at the highest traffic parks have signs.	Sign cost ~$800 for purchase and installation per sign.
Legislation, Planning and Development - Section 5.3							
11	High	Upon the roll-out of the new BC Building Code in 2024, RDCK should review and assess what FireSmart principles are included and compare them to the draft Wildfire Development Permit Areas (DPAs). Update the draft DPAs as required. Initiate a process to implement the wildfire DPAs, if still required, to manage for risks not addressed in the new Code.	FireSmart construction and landscaping policies manage for wildland-to-structure fire transfer (and vice versa). Over time, resiliency will be built up at the interface and intermix areas.	EA-F / RDCK (Consultant)	Upon BC Building Code roll out	All new development complies with the policy.	CRI FCFS: up to $10,700 available to apply to incremental staff hours or contract cost.
12	High	Update references to “fire risk” in EA-F’s OCP (e.g., sections 17.4 and 17.6) to include referencing the Local Wildfire Risk Analysis developed as part of this plan, as it more accurately reflects current fire risk for EA-F’s WUI than currently available provincial data.	EA-F should look to the most recent and accurate wildfire risk analysis for its WUI to be used to determine areas of Moderate and High wildfire threat for reducing wildfire threat through community planning and development purposes.	EA-F / RDCK (Consultant)	Upon next OCP review and update	OCP update that includes FireSmart construction/development policies for single home and lot development and major renovations.	CRI FCFS: up to $10,700 available to apply to incremental staff hours or contract cost.

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
13	High	Consider adopting a Wildfire Landscaping Bylaw to restrict flammable landscaping. Example: prohibit conifer vegetation in the Immediate Zone of a residence or structure (0-1.5 m) and prohibit the planting of new conifer vegetation in Priority Zone 1 (1.5-10 m). Highly flammable landscaping plants (ex., cedar hedges) were noted throughout the Township, especially on more densely populated streets. This can be an effective communication tool regardless of enforcement capacity.	Highly flammable landscaping plants (ex., cedar hedges) were noted throughout EA-F, especially on more densely populated streets. Landscaping vegetation can act as a wick, moving fire to homes/structures and throughout communities.	EA-F / RDCK (Consultant)	5 years	A Wildfire Landscaping Bylaw is in effect.	CRI FCFS: up to $10,700 available to apply to incremental staff hours or contract cost.
14	High	Continue to conduct FireSmart Critical Infrastructure Assessments for public works and community/ government buildings. Conduct FireSmart mitigation as soon as possible (vegetation management, material upgrades). Set a priority sequence for assessment based on wildfire response and post-wildfire recovery. Encourage and support privately owned community halls that act as community shelters, and private or community owned critical infrastructure, to do the same.	Protecting water systems, emergency shelters, and community infrastructure is critical to wildfire response and recovery. Assessments have already been completed for EA-F fire halls.	EA-F / RDCK (Local FireSmart Representatives ; FireSmart Coordinator; and/or Consultant)	Ongoing	Number of assessments completed and mitigation hours/investment	CRI FCFS: up to $800 per assessment and up to $50,000 for mitigation per structure (publicly owned only).
Cross Training & Fire Department Resources - Section 5.4							
Training							
15	High	Continue to support 'train-the-trainer' programs so that required courses (e.g., S-231, WSPP-115) can continue to be delivered in-house to EA-F fire department members.	To continue providing an opportunity to expand in-house wildland specific training, and potentially train adjacent fire departments or community groups.	RDCK / EA-F / EA-F fire departments	Annually	Number of firefighters (both paid and on-call volunteer) with wildland training beyond maintains or increases.	Staff time; CRI FCFS Training. Columbia Basin Trust funding.

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
16	High	Support FireSmart specific training to EA-F fire departments. Examples include: FireSmart 101, Local FireSmart Representative (LFR), and FireSmart Home Partners Mitigation Specialists.	To build understanding and knowledge of FireSmart principles within fire response area fire departments. To certify fire response area fire department members so they can implement various FireSmart assessments within the community.	RDCK / EA-F / EA-F fire departments	Annually	Number of firefighters (both paid and on-call volunteer) with FireSmart training increases.	Staff time; CRI FCFS funding is available for training.
17	High	EA-F fire departments should seek out (and be supported by RDCK/EA-F in doing so) opportunities to perform wildfire response and structure protection drills - using hydrants, standpipes, and natural water sources, *with* BCWS.	Fast and effective deployment of available Structure Protection Units (two are owned by RDCK) and any additional equipment that the fire departments have will be crucial in any interface fire scenario. Equipment compatibilities and/or differences between those available and what equipment BCWS uses should be identified and addressed ahead of time.	Fire Response Area Fire Departments (BCWS)	Annually	Drills performed at least once annually in different communities with different water sources.	Staff time as required.
Water							
18	High	Continue to identify and map natural and artificial water sources useable for fire suppression across the entire regional district. Having a digital map would allow it to be uploaded into response vehicles' CAD systems, shared with BCWS response personnel, as well as included in the pre-planning of emergency community water delivery systems connecting major natural water sources with interface communities, to facilitate deployment of a structural protection system. Include important details such as: estimated water volume and access point notes. Share this information to all mutual aid fire response partners, and update over time.	Most firefighting service in EA-F requires water shuttling. Wildfire fighting response almost always relies upon local water sources. This impacts EA-F's wildfire resilience. Shuttling or pumping water from lakes and rivers to fill bladders can be pre-planned, including tender access points, traffic control, permanent large-volume pumps, and piping.	RDCK GIS department/ EA-F fire departments (to aid in identification for their service areas or share data already acquired) (BCWS)	5 years and ongoing	A fire suppression water source plan and map are produced and shared.	CRI FCFS Community Water Delivery Assessment funding available for incremental staff hours or contract cost.
19	High	In coordination with recommendation #18, create opportunities for BCWS to work with independent water systems to identify assets. Assist those communities in retrofitting their systems to be compatible, if required.	Reducing barriers to BCWS for accessing water sources in the WUI increases opportunities to fight WUI fires.	RDCK / FireSmart Coordinator (BCWS)	Annually	Communities with self-managed water systems are meeting with BCWS.	EA-F, BCWS, and community time.

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
20	Moderate	EA-F fire departments should seek (or continue to uphold, if accredited already) Superior Tanker Shuttle Service accreditation from Fire Underwriters Survey.	This accreditation certifies that the fire department can supply enough water to have some areas without fire hydrants within a certain distance of their structures qualify as having a fire hydrant within 300m of it (this can also potentially lower insurance rates for property owners within the EA-F fire response areas). Note: this does not increase the overall water supply already available under automatic and mutual aid agreements.	EA-F fire departments/ RDCK	5 years	Superior Tanker Shuttle Service accreditation achieved by fire response area fire departments.	fire response area fire departments staff time as required (and EA-F budget for equipment upgrades and purchases, if needed).
Equipment & Staff							
21	High	In coordination with recommendations #17 and #18, the EA-F fire departments should continue (or begin, if not done already) annual inspections by BCWS of their wildland firefighting equipment. Any gaps should be addressed, as required.	To ensure proper equipment is available to respond to interface wildfire events, and that equipment is compatible with BCWS's. CRI FCFS funding is available for incremental equipment purchases.	EA-F fire departments (RDCK; BCWS)	Annually	Annual inspection of wildland firefighting equipment from BCWS; gaps filled as practicable.	Fire department and RDCK staff time; CRI FCFS equipment funding up to cost maximums.
Interagency Cooperation - Section 5.5							
22	High	Engage (or continue to) with the established local Community FireSmart Resiliency Committee (CFRC) to plan, implement, and coordinate FireSmart initiatives, including fuel management treatments. Look to include EA-F volunteer fire department Fire Chiefs.	To provide a platform for information sharing. All parties have indicated a willingness for collaboration, which will allow for greater management of wildfire risk both within and surrounding EA-F's WUI.	Recommended Nelson CFRC	Ongoing	CFRC FireSmart meeting takes place at least once annually.	At least 8 hours per meeting to prepare, participate and debrief. CRI FCFS up to $2,000 per meeting.

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
23	High	As communities self-organize for FireSmart initiatives, and even take up the FireSmart Canada Neighbourhood Recognition Program (see Recommendation #43), RDCK and EA-F should look to support their inclusion in a CFRC, or develop local sub-committees, as required.	To further community involvement in FireSmart and wildfire risk reduction activities at the community level.	RDCK / EA-F FireSmart Coordinator	Ongoing	Additions to existing CFRCs are made, as required, or new ones are established, as needed.	Cost and time dependent upon level of effort required.
24	High	Work with RDCK, CFRC members, and MOF to develop a fuel treatment/fuel break tracking system to spatially manage proposed and completed fuel management areas both within EA-F's WUI and outside it at the regional level.	It is imperative that all land managers know what adjacent or overlapping jurisdictions have identified as fuel breaks, so that time and money is not wasted reassessing or re-prescribing an area.	CFRC / MOF / RDCK	As soon as possible	A regional GIS tracking system is established, or a provincial one is developed that CFRC members can access.	Cost and time dependent upon level of effort required.
25	High	Lobby forest land licensee/managers (e.g., BC Timber Sales, Woodlots, volume-based licensees) to be aware of where their tenure overlaps EA-F's WUI and to develop and implement (or continue implementing) forest planning, harvesting, slash management, and reforestation plans that reduce wildfire behaviour in these areas.	Cutblock placement can break up the forest continuity across the landscape – with proper slash and reforestation management, they can remain as areas of low wildfire behaviour for many years. However, if not managed properly, they can increase wildfire behaviour.	RDCK / EA-F / MOF / Forest Licensees and Managers / Local Government elected officials/ Community members	Ongoing	Forest licensees/ managers are aware of their tenure overlaps with the WUI and are actively working towards forest management plans to reduce wildfire behaviour in those areas.	RDCK/EA-F staff time for discussions.

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
26	High	Lobby and work with the electrical power providers in and influencing the community's WUI, MOTI for Provincial highways, and rail line owners/operators to regularly maintain their right-of-way's vegetation.	Transmission lines can provide excellent fuel breaks and access for first responders in the event of a wildfire – if the vegetation on them is regularly managed and kept in a low-hazard state. They can also be the source of fire ignitions - trees and other vegetation intruding into power lines can cause fires in multiple ways. Highways can also provide excellent fuel breaks if the vegetation on them is regularly managed and kept in a low-hazard state. If not, they can act as wicks moving fire along them, or ignition sources for fires from burning cars, cigarette butts, sparks, etc. Additionally, highways are a main access/egress route during an emergency – these routes should be kept at as low risk of state as possible.	RDCK / EA-F (MOTI; Local Government elected officials (Electrical Providers; Rail line operators)	Yearly and ongoing	Right-of-way maintenance discussions are open and ongoing; right-of-ways are kept in low-risk states.	RDCK/EA-F staff time for discussions.
Emergency Planning - Section 5.6							
27	High	Continue tabletop wildfire scenario tabletop exercises with emergency management and CFRC partners. Yearly, pre-fire season is best. Move the "WUI fire" to a different area of EA-F's WUI each time.	Tabletop exercises provide an opportunity to identify weak spots in a plan and collaborate.	RDCK (CFRC; RCMP; BCWS)	5 years	Knowledge of 'pinch points' in an evacuation scenario and understanding of roles and responsibilities.	CRI FCFS Emergency Planning: up to $2,000 per meeting. Possibly CRI / CEPF / Columbia Basin Trust
28	High	RDCK and EA-F should continue to promote the Voyent Alert! System to residents and visitors.	Clear, consistent, concise, and quick communication during an emergency event and evacuation are integral to the prevention of loss of life. A lack of this was identified as an issue during recent WUI fire disasters, such as that in Lahaina, Maui, USA and Fort McMurray, Alberta.	RDCK (FireSmart Coordinator)	Ongoing	Continued update of the Voyent Alert! System (can track downloads from app providers).	RDCK for promotion.

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
29	High	Invest in back-up generators for any critical infrastructure that does not have one. Encourage private businesses that provide critical services, like gas stations and grocery stores, to follow suit.	Back-up generators for pumphouses, treatment plants, and community buildings (especially those designated as emergency shelters) would facilitate both emergency response (water supply for suppression) and rapid community return and recovery following a fire.	RDCK / EA-F (Private Industry)	ASAP	A budget and purchase plan for back-up generators is implemented, starting with the most critical infrastructure.	Cost varies - ~$10,000
30	High	Initiate a roof-top sprinkler program for residential properties. Investigate bulk orders from wildfire protection or irrigation companies or commercial gutter-mount kits. Consider sprinkler kits as an incentive to communities/neighbourhoods for FireSmart participation. Discuss with local Fire Departments and BCWS what mounting/sprinkler types are best. This can be directly led by RDCK, or RDCK can offer support to local fire departments and community organizations to assist doing so.	Rooftop sprinklers reduce the time and resources needed to set up a structural protection system in a community threatened by wildfire. Sprinkler installation/acquirement could be paired with a free FireSmart Assessment.	RDCK / EA-F (EA-F fire departments; BCWS)	3 years and ongoing	Establish an efficient and effective system. Track the number and location of sprinklers purchased and installed annually.	Bulk sprinklers $40 - $100 each; gutter mount kits ~$100-200 for one home
31	High	Schedule regular updates of this Community Wildfire Resiliency Plan: target every 5 years.	A current and acceptable CWRP is required for funding under the CRI FCFS program. Update the wildfire threat for areas with completed fuel treatments and identify additional areas for treatment.	RDCK / EA-F	5 years – 2028 update	EA-F always has a current and acceptable CWRP.	~$32,000; CRI FCFS funding
32	Moderate	Pre-plan emergency community water delivery systems to connect major natural water sources with interface communities/neighbourhoods to facilitate deployment of a structural protection system. This can be supported by recommendation #18. The Argenta Emergency Preparedness Group has been working on this since 2023 (see Section 5.4).	RDCK has many large natural water bodies and streams/creeks to draw from in the event of a wildfire. Shuttling or pumping water from lakes and rivers to fill bladders may be planned in advance, including tender access points, traffic control, permanent large-volume pumps and piping.	RDCK / EA-F (BCWS)	5 Years	Assess community water delivery for each neighbourhood. Develop and test neighbourhood specific plans.	CRI: Assessment of Community Water Delivery Ability - incremental staff hours or contract cost

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
33	Moderate	Promote the installation of visible and reflective addresses in EA-F. Consider and explore how to regulate addressing across the District. Note: RDCK has requested a program to support standardized address signage, but stated that if building permits are not applied for then there is no street address. There are no regulations on addressing.	To allow for faster and more direct response to specific properties by first responders during an emergency.	EA-F / RDCK	5 years	Majority of properties have reflective, visible addresses.	Promotion campaign; consider providing discounted signs. 40-60 hours and $40-60 per sign
Vegetation Management - Section 5.7							
Fuel Management Treatments							
34	High	Develop fuel management prescriptions for the identified Potential Fuel Treatment Units (PTUs), starting with those identified as High priority. Continue with treatment implementation when possible.	To reduce wildfire threat and risk to interface and intermix communities within the WUI. Also, to provide FireSmart vegetation management examples to the public that can be implemented on their own properties. See “Rationale” column in Table 26 for more detailed treatment rationales.	EA-F / MOF / BCWS	5 years	Approved FMP(s) for identified High priority areas.	CRI FCFS funding available for prescription and treatments; ~$425/hectare for a ~20 ha prescription
35	High	Lobby Provincial Government (Ministry of Forests) and other potential funding organizations for grant funds to implement landscape level fuel treatment on private land.	Much of EA-F’s communities’ structures are surrounded by undeveloped, forested private land. Current funding streams for fuel reduction at the landscape level are targeted, and thus limited, to public land. However, the interface wildland does not stop at the public/private land border.	Local Government (Provincial Government)	5 years	Discussions initiated and ongoing	Time and cost dependant upon level of engagement required.

Residential FireSmart							
36	High	In conjunction with provided home FireSmart Assessments (see Recommendation #7) Continue offering a local rebate program to property owners that have completed a FireSmart home assessment (Home Ignition Zone assessment or Home Partners Program Mitigation assessment. RDCK, EA-F, and FireSmart coordinators should advertise that the amount eligible for rebate has increased to $5000 for the CRI FCFS 2024 application program.	FireSmart home assessments encourage action in the FireSmart Home Ignition Zone of a community. Offer a rebate program (funded through CRI FCFS) to residents who have a pre- and post-work FireSmart assessment conducted. Focus on removal of conifer hedges and upgrading exterior structure materials.	RDCK / EA-F (FireSmart Coordinator)	Annually	Number of properties participating annually.	50% of costs per property up to $5,000, plus 2 hours administration time per property (CRI FCFS).
37	High	Continue providing regional district-led options for the disposal of yard waste. Currently, this includes having tipping fees waived (May and October) for yard waste at the RDCK transfer stations.	Yard waste burning restrictions limit options for debris disposal. Free debris disposal may be used as an incentive to participate in other FireSmart activities, like assessments or workshops.	RDCK	Annual	Municipally funded yard waste disposal continues.	CRI FCFS funding is available for tipping fee coverage.
38	High	Consider implementing a community chipper program. Education of FireSmart yard and landscaping principles, including chipping specifications, should be incorporated into the program.	To reduce fire and wildfire hazards on private property within the WUI, especially those long distances from RDCK landfills/transfer stations, and to promote FireSmart vegetation management knowledge and education. The intent is for landscaping/yard vegetation to be included, not farm or agriculture vegetation. This could assist with more uptake of residential FireSmart landscaping principles as the disposal method is brought to the resident, especially for those older and less mobile.	RDCK / EA-F FireSmart Coordinator	Annual (pre-fire season is best)	Number of properties who elect to have debris disposed.	CRI FCFS funding; ~$100-150 per chipper crew hour.
39	Moderate	Consider releasing an annual RDCK FireSmart report to the public that tracks community-specific uptake in various FireSmart initiatives, as well as tracks fuel management at all scales.	As the program grows, reporting allows the RDCK FireSmart program to track challenges and successes, further promote the program, and tailor outreach methods to achieve the most uptake.	RDCK / EA-F FireSmart Coordinator	Annual	An annual report is published.	Eligible for CRI funding – FireSmart staff time. Estimate 40-80 hours.
40	Moderate	Engage with local garden centers to implement the FireSmart BC Plant [Tagging] Program.	FireSmart BC introduced a plant tagging program in 2021 that has been implemented with great success by over 34 nurseries and garden centres to date. The Plant Program is an easy way to provide information at the point of purchase for homeowners and landscapers. See: https://firesmartbc.ca/landscaping-hub/plant-program/	Local Garden Centres (RDCK; EA-F FireSmart Coordinator)	5 years	Local garden centres have been notified of the program.	Staff time for engagement (2-4 hours per garden centre).

Community and Critical Infrastructure FireSmart							
41	High	Implement recommended vegetation management recommendations from FireSmart Critical Infrastructure Ignition Zone Assessments (see Recommendation #14), when completed, on a priority basis.	To reduce fire behavior and risks to critical infrastructure most important to fire and wildfire fighting and post-wildfire recovery.	RDCK / EA-F FireSmart Coordinator	5 years	High priority critical infrastructure has had FireSmart vegetation management completed.	CRI FCFS funding up to $53,500 per municipal infrastructure (vegetation management included).
42	High	As part of fuel treatment implementation, RDCK/EA-F should develop interpretive signage to demonstrate pre- and post-fuel treatment forest stands conditions.	Interpretive signage could include text explaining the purpose of the fuel management treatment, connection to the CWRP, and FireSmart practices residents nearby can take to reduce wildfire hazards around their yards and homes.	RDCK / EA-F FireSmart Coordinator	5 years	Signage installed during implementation phases.	Eligible for UBCM CRI funding.
43	Moderate	Continue to support and promote the FireSmart Canada Neighbourhood Recognition Program to communities within EA-F. Identify community champions to spearhead organization for those communities not already organized, and support those communities that have been recognized in the past to continue working towards being so.	There are many small communities throughout EA-F that, by working together, could reduce their community-scale wildfire risk easily and substantially. The program supports a small-scale approach for neighbourhoods consisting of 5-50 homes, with the intent to implement achievable FireSmart goals	RDCK / EA-F FireSmart Coordinator	Ongoing	Increase in number of recognized communities.	FireSmart Canada $500; RDCK FireSmart Champion Grant up to $3000
44	Moderate	As part of the FireSmart Canada Neighbourhood Recognition Program (FCNRP), apply to CRI FCFS for funding to develop Neighbourhood FireSmart Plans.	To help guide FireSmart Canada Neighbourhood Recognition Program communities and their community champions to complete wildfire risk reduction measures.	RDCK / EA-F FireSmart Coordinator	In line with FCNRP Community program uptake.	Communities working towards FCNRP status have a Neighbourhood Plan	Eligible for UBCM CRI funding.

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FREQUENTLY USED ACRONYMS

AOI	Area of Interest
BC	British Columbia
BCWS	British Columbia Wildfire Service
BEC	Biogeoclimatic Ecosystem Classification
CFFDRS	Canadian Forest Fire Danger Rating System
CRI	Community Resiliency Investment
CWPP	Community Wildfire Protection Plan
CWRP	Community Wildfire Resiliency Plan
DPA	Development Permit Area
EA-F	RDCK Electoral Area F
FBP	Fire Behavior Prediction System
FCFS	FireSmart Community Funding and Supports: Stream 1 of the UBCM CRI Program
HIZ	Home Ignition Zone
MOF	Ministry of Forests
MOTI	Ministry of Transportation and Infrastructure
NDT	Natural Disturbance Type
PSTA	Provincial Strategic Threat Assessment
PTU	Proposed Treatment Unit
RDCK	Regional District of Central Kootenay
UBCM	Union of British Columbia Municipalities
WRR	Wildfire Risk Reduction: Stream 2 of the UBCM Community Resiliency Investment Program, administered by the Ministry of Forests
WTA	Wildfire Threat Assessment
WUI	Wildland Urban Interface & eligible Wildland Urban Interface

SECTION 1: INTRODUCTION

In June 2023, B.A. Blackwell and Associates Ltd. was retained by the Regional District Central Kootenay (RDCK) to assist Electoral Area F (EA-F) in developing a new Community Wildfire Resiliency Plan (CWRP). A CWRP has its roots in the Community Wildfire Protection Plan (CWPP) framework, which was originally established in BC in response to the series of devastating wildfires in 2003. This plan replaces the previous 2016 EA-F CWPP. Recent wildfire disasters like those experienced in Oregon State (2020), Washington State (2014, 2015, 2020, 2023), Fort McMurray, Alberta (2016), BC (2017, 2018, 2021, 2023), and California (2017, 2018, 2020) continue to display the vulnerability of communities and the potential toll of wildfires on families, neighbourhoods, public health, and the economy of entire regions. These events, along with important advances in loss prevention programs, have spurred the need for greater consideration and due diligence concerning fire risk in the wildland-urban interface (WUI).[4] CWRPs are an invaluable opportunity to proactively manage wildfire risk and increase community resilience to wildfire.

CWRPs are currently being developed at many jurisdictional and geographic scales, and are individually tailored to address the needs of different communities in response to their size, their capacity, and the unique threats that they face. Despite these differences, the goals of a CWRP remain the same and are founded in the seven FireSmart™ disciplines: Education, Legislation & Planning, Development Considerations, Interagency Cooperation, Cross-Training, Emergency Planning and Vegetation Management.

CWRPs are funded in BC by the Union of BC Municipalities (UBCM) under the Community Resiliency Investment (CRI) FireSmart Community Funding and Supports (FCFS) Program. As per funding requirements, this CWRP is completed according to the 2022 CRI template.

1.1 PLAN PURPOSE AND GOALS

This plan accounts for changes that have occurred since EA-F's last CWPP and takes advantage of the most recent community wildfire planning framework in BC. This CWRP identifies the interface wildfire risk within EA-F's WUI communities, and gives RDCK and EA-F a current and accurate understanding of the threats to human life, infrastructure, and values at risk from wildfire. This CWRP is intended to serve as a framework to guide the implementation of specific actions and strategies to:

- Increase the efficacy of fire suppression and safety of emergency responders,
- Reduce potential impacts and losses to property and critical infrastructure from wildfire, and
- Reduce potential wildfire behavior and threat within the electoral area's WUI.

To help guide and accomplish the above strategies, this CWRP will provide RDCK and EA-F with:

- An assessment of wildfire risk to the communities,
- An assessment of values at risk and potential consequences from wildfire,

[4] Wildland urban interface is defined as the presence of structures in locations in which conditions result in the potential for their ignition from flames and firebrands/embers of a wildland fire (National Fire Protection Association).

- Maps of fuel types and recommended areas for fuel treatments,
- An assessment of emergency response capacity, and
- Options and strategies to reduce wildfire risk through the seven FireSmart disciplines.

1.2 PLAN DEVELOPMENT SUMMARY

The CWRP development process consisted of five general phases:

1) Formation or confirmation/continuation of the Community FireSmart Resiliency Committee(s) (CFRC – see Section 5.5) Consultation with the CFRC(s) and information sharing with stakeholders and First Nations occurred throughout.
2) Review of relevant plans and legislation regarding emergency response and wildfire (Section 2).
3) Description of the community and identification of values at risk (Section 3).
4) Assessment of the local wildfire risk (Section 4).
5) Analysis and action plan for each of the seven FireSmart disciplines (Section 5).

The following next steps are a suggested route towards operationalizing the recommendations detailed in this CWRP:

1. The CFRC(s) should continue to meet periodically, as needed to coordinate the fulfillment of this report's recommendations (consider annually or bi-annually, before or during the fire season – per Recommendation #22).
    a. Meetings could include some or all of the parties identified in Section 5.5.
2. The next meeting could be held in Spring-2024. Consider identifying recommendations to allocate resources to, and pursue funding for, from the 2024 UBCM CRI funding intake at this time.
    a. Consider meeting well in advance of the UBCM CRI application deadline (early October 2024), in order to discuss upcoming projects and align activities and initiatives where possible.
    b. RDCK will apply for UBCM CRI funding and compile final reporting.
    c. Continued meetings of the CFRC(s) would be a suitable venue to identify if additional support is needed to fulfill the targeted recommendations.
        i. Additional support might be required in order to coordinate activities that will bridge more than one funding year (i.e., prioritizing, prescribing and supervising implementation of vegetation management; coordinating plan and policy review) or that require more time and resources currently available to any one CFRC member (e.g., potentially some FireSmart education recommendations).
        ii. Consultant support or a term contract salary could be incorporated into the UBCM CRI application accordingly.
3. In subsequent meetings, members from different agencies could share information about actions taken to fulfill recommendations.

Documentation of the status of CWRP recommendations could be compiled and maintained alongside these meetings.

SECTION 2: RELATIONSHIP TO OTHER PLANS AND LEGISLATION

Wildfires can affect all aspects of a community. As a result, there are many plans specific to or including EA-F that relate to this CWRP. This section reviews all relevant plans, policies, bylaws, guidelines, and provincial legislation to identify sections within that are relevant to community wildfire planning and response.

2.1 LINKAGES TO CWPPS/CWRPS

Regional District of Central Kootenay Area F Community Wildfire Protection Plan Update - 2016[5]

In 2016, B.A. Blackwell & Associates completed a Community Wildfire Protection Plan update for the Regional District of Central Kootenay Area E. The scope of this plan was a two-kilometer buffer around all residences and critical infrastructure based on WUI density criteria. A tabularized review of the 2016 recommendations and their implementation status is presented in Appendix A. Overall, completed activities have primarily fallen within the FireSmart Education discipline, but some recommended fuel treatments have been prescribed and/or treated.

Listed below are jurisdictions adjacent EA-F that have been involved in community wildfire planning. *Strategic opportunities exist between these plans and should be considered.*

- *RDCK Electoral Area E CWRP 2023* – concurrently in development.[6]
- *RDCK Electoral Area I CWRP 2023* – concurrently in development.[6]
- *City of Nelson CWRP 2022* – recently completed.[6]

2.2 LOCAL PLANS AND BYLAWS

The sections and policies of EA-F's Rural Official Community Plan (OCP) listed in Table 2 are directly relevant to proactive wildfire resilience in EA-F. The OCP was reviewed as part of this CWRP to address any gaps or limitations that inadequately address fire hazards or risk mitigation. A major gap that was identified in the EA-F's OCP as it relates to wildfire is the lack of fire management policies (beyond "recommending") specific to single home/lot development or renovations.

[5] https://www.rdck.ca/assets/Services/Emergency~Management/Documents/RDCK%20Area%20F%20CWPP%20FINAL%20131220 16.pdf

[6] By B.A. Blackwell & Associates Ltd and Cathro Consulting Ltd.

Table 2: Summary of Electoral Area F's Rural Official Community Plan emergency and wildfire-related objectives and policies and their relationship to this CWRP.

Section [EA-F Rural Official Community Plan Bylaw No. 2214, 2011][7]	Policy Description / *Relationship to CWRP*
8.0: Economic Development Policies	**Forestry: 8.3.11:** Supports the Provincial FireSmart guidelines for the protection of forestry resources. *Forestry resources should be accounted for during prescription development and implementation. Additionally, forestry practices (cutblock location, site plans, slash management) can both increase and decrease wildfire risk within the WUI (see Section 5.5).*
10.0 Open Space Policies	**10.3.9:** The regional board supports the fire management policies set out in the Hazard Lands Section for any proposed residential uses. *Higher level government support of FireSmart policies enables support and implementation at all levels.*
11.0 Residential Lands and Housing **General Residential Policies**	**11.3.3:** The regional board will assess and evaluate proposed residential development based on the following criteria, in addition to the criteria found in the corresponding Residential policies where appropriate: **d)** susceptibility to natural hazards including but not limited to flooding, slope instability or wildfire risk. *Wildfire as a hazard allows for its associated risks to be planned and mitigated.*
12.0 Commercial Land General Policies	**12.3.2:** The regional board Supports maintaining and enhancing existing commercial land uses, and supports new small scale commercial development proposals that reflect the needs of the local community and the anticipated demand from tourism, and will use the following criteria, in addition to the criteria for large scale service and commercial development where appropriate, to assess future development: **d)** susceptibility to natural hazards including but not limited to flooding, slope instability or wildfire risk *Wildfire as a hazard allows for its associated risks to be planned and mitigated.*

[7] https://www.rdck.ca/assets/Government/Bylaws/Land~Use-Planning/2260-E_OCP_Consolidated_2751.pdf

	12.3.4: The regional board considers alternatives to large scale service and commercial development in the rural area, such as directing it to existing residential nodes and municipalities which has the necessary infrastructure and support services. A proposal to introduce major commercial development in the rural area should clearly articulate the need for it, analyze its impact on the rural community, and demonstrate how it will respect the character of the rural area. The Regional Board will use the following criteria, in addition to the criteria small scale commercial development, to assess future applications: **d)** has available fire protection services. *Local fire response is paramount towards initial attack of WUI wildfires, as well as for stopping structure fires from starting wildland fires (see Section 5.4).*
13.3 Administrative and Institutional Policies	**12.3.3:** The regional board supports locating fire halls, indoor recreation amenities, and community halls in the rural area as development require, and the needs of the community evolve. *Local fire response is paramount towards initial attack of WUI wildfires, as well as for stopping structure fires from starting wildland fires (see Section 5.4). Municipal buildings that can be identified and used as safe spaces during an emergency (emergency shelters) increase community resiliency to wildfire events (see Sections 3.3 and 5.3).*
17.3 Hazard Lands - Fire Management Policies	**17.4:** The regional board may request that the Provincial Subdivision Approving Authority require the developer to undertake a fire hazard risk assessment at the time of submitting a subdivision application where the Province indicates that a property may be subject to a moderate or higher fire risk. The Regional Board may require the same assessment during the land use designation amendment or applicable development permit process. The assessment will provide a recommended fire hazard mitigation strategy, completed by a qualified professional, that will be submitted to both the RDCK and the Province, and is recommended to include, but is not limited to, the following: A. incorporating fuel breaks adjacent to or on the residential subdivisions; B. establishing zones around potential structures and homes which are clear of debris, highly combustible material or trees; C. utilizing fireproofing techniques and fireproof materials in building design; D. designing roads that provide evacuation routes and facilitate movement of firefighting equipment; E. ensuring all roads are named and signed; F. ensuring availability of water supply facilities adequate for fire suppression; G. ensuring the provision of access to local water sources, lakes and watercourses as part of access requirements; and H. implementing setbacks, interfacing fire protection standards, and building material standards pursuant to the Provincial publications The Home Owners FireSmart Manual and FireSmart: Protecting Your Community From Wildfire. *Develops communities of defensible space and safe access/egress during an emergency (and wildfire) event. Embedding FireSmart subdivision principles into development design is paramount to lowering wildfire and emergency evacuation risks in neighbourhoods. Addressed in Section 5.3.*

	17.5: Directs the Provincial Subdivision Approving Authority to require that where a fire hazard mitigation strategy has been prepared the developer enter into a restrictive covenant to ensure the strategy is followed. *To continue existing, lowered wildfire risk into the future. Addressed in Section 5.3.*
	17.6: Encourages proactive wildfire mitigation programs to reduce the risk of wildfires to the 'Moderate' fire hazard risk as recommended by the Provincial FireSmart program. *Can be accomplished through this CWRP's Action Plan (see all recommendations in Section 5).*
	17.7: Promotes prescribed burning in areas where there is the potential for wildfire abatement and habitat enhancement. *Can be accomplished through prescription development and treatment of Potential Treatment Units within this Plan (see Section 5.7).*
	17.8: Considers the use of prescribed burning to enhance forage production and riparian remediation. *Can be accomplished through prescription development and treatment of Potential Treatment Units within this Plan (see Section 5.7).*
	17.9: Where practical, coordinates and implements fire hazard reduction activities with priority areas for prescribed burning for ecosystem enhancement purposes. *Can be accomplished through prescription development and treatment of Potential Treatment Units within this Plan (see Section 5.7).*
	17.10: Supports protection of accesses to water sources such as hydrants, standpipes, lakes, and streams, ensuring these accesses remain free of obstructions for fire protection purposes. *Access to reliable, local water sources is paramount for first responder and BCWS firefighting effectiveness. Addressed in Section 5.4.*
	17.11: Encourages local Fire Departments to work with the RDCK to keep its emergency preparedness plan up to date. *Furthers inter-agency cooperation (see Section 5.4) and wildfire emergency preparedness (see Section 5.6).*
18.3 Transportation Policies	**18.3.8:** Encourages that private roads that access forest lands should be of adequate design to allow for the safe movement of logging and fire-fighting equipment. *Access by emergency responders to the WUI is paramount towards both defending communities from WUI fire events, but also for aiding in fuel treatment practicability (see Section 5.6).*

20.1.d Development Permit Areas	Site design should consider susceptibility to natural hazards, including but not limited to flooding, slope instability, or wildfire risk. *Private property FireSmart Home Ignition Zone and structure risk reduction is the #1 avenue towards homes and structures surviving a wildfire event. Addressed in Section 5.3.*

The local bylaws listed in Table 3 are directly relevant to proactive wildfire resilience in EA-F. These bylaws were reviewed as part of the CWRP to address any gaps or limitations that inadequately address fire hazards or risk mitigation.

Table 3: Summary of local bylaws and their relationship to the CWRP.

Bylaws	Section	Description and *Relation to CWRP*
Building Bylaw No. 2200 (2010)	18.4	Fire stopping components must be in place before insulation and exterior sheathing are installed. *- Addresses the need for fire protection in new construction to manage room-to-room and structure-to-structure fire transmission.* *- To manage wildland-to-structure fire transfer (and vice versa), FireSmart principles were developed to address this gap. Currently, to mandate exterior construction materials and landscaping beyond the BC Building Code and the building bylaw, a Development Permit Area can be implemented (see Section 5.3). Note: the BC Building Code is currently being updated, with roll out planned for late-2024, and may include FireSmart standards.*
Emergency Management Regulatory Use Bylaw No. 2210 (amended by Bylaw No. 2758 in 2021)	5.1	Outlines administrative structure and roles of Emergency Program *- Provides structure and guidelines in times of emergency.*
	Amended Bylaw No. 2758	Adds “mitigation” into the description of the Emergency Program and Emergency Management Plan *- RDCK to develop, coordinate and manage emergency mitigation, preparedness, response, and recovery. This would include from wildfires.*
Manufactured Home Parks Bylaw No. 1082 (1995)	8.8.3	Fires shall be made only in stoves, incinerators, or other structures designed for that purpose. *- Limits fire ignition and propagation risks in structures made largely from ignitable and combustible materials.*
	8.8.4	If no approved fire hydrant is available to provide protection, a minimum of one (1) stagnant water supply at a minimum of 15,539 litres (6000 Igal) shall be provided on site in order to be accessed in case of emergency for fire protection purposes on properties serviced by Fire Protection.

Bylaws	Section	Description and *Relation to CWRP*
		- Increases assurance of useful water supply systems in the event of a fire to responding fire departments.
Parks Regulation – Consolidated Bylaw No. 2173	22	No person shall start or maintain a fire in a park, except in facilities provided at a park for that purpose. *- Limits fire ignition and propagation risks.*
	24	No person shall leave a fire in a park unattended. *- Limits fire ignition and propagation risks.*
	25	No person shall burn any unsuitable materials including but not limited to organic yard waste, household waste, plastic, rubber, flammable or combustible liquid, or any treated lumber or construction debris, or toxic waste. *- Limits fire ignition and propagation risks.*
	52	No person shall possess or discharge Fireworks, firecrackers or explosive materials of any kind in a park, except for an event authorized by a park use permit. *- Limits fire ignition and propagation risks.*
Resource Recovery Facilities Regulatory Bylaw No. 2905	8 (15)	No person other than the Site Operator or Service Personnel or their representative shall start any fires at any Resource Recovery Facility. *- Limits fire ignition and propagation risks.*
Volunteer Fire Service Regulation Bylaw No. 2769	4.1	Jurisdiction of each Fire Department, and the powers granted to each Fire Department and its Fire Chief and Members under this Bylaw, is restricted to the boundaries of the Fire Department's particular Fire Protection Service Area as set out in its establishment bylaw. A Fire Department shall not respond to any Incident under this Bylaw outside of the boundaries of its Fire Protection Service Area except as specified in Section 4(2)(a) to (f) of this Bylaw. *- Outlines jurisdictional limits of fire departments, which may impact rural communities with no immediate fire service (see Section 5.6).*
	4.2	Apparatus and Fire Department Equipment shall not be taken beyond the geographical limits of the jurisdiction for reasons other than repair, maintenance, or training unless: (a) a written agreement, approved by the Regional District, authorizes the supply of Members, Apparatus, Fire Department Equipment, Fire Protection Services and Associated Services to another jurisdiction; or (b) under the authority of the CAO, the Regional Fire Chief, or the Emergency Operations Center Director; or (c) in connection with a request for assistance by a the Office of the Fire Commissioner, or a Federal or Provincial emergency response Agency; or (d) in connection with an Incident near the boundaries of the Fire Service Protection Area which, if left untended, may threaten the Fire Service Protection Area or other such Service area; or (e)

Bylaws	Section	Description and *Relation to CWRP*
		In the event of a Federal or Provincial State of Emergency; or (f) Under the provision of a bylaw for Associated Services. *- Outlines jurisdictional limits of fire departments, which may impact rural communities with no immediate fire service (see Section 5.6).*
	9.4	No person shall grow shrubs, hedges, plants or trees so as to obstruct the visibility or use of a fire hydrant, standpipe or sprinkler connection. *- Provides linkage to FireSmart activities and property preparedness.*
	10.1	Where this bylaw applies within a municipality the Regional District is authorized to enforce municipal open burning regulations. *- Limits fire ignition and propagation risks.*
	12.2	The Occupier of a Public Building in which any of the Alarm System, Fire Protection Equipment, or emergency power system is not operating must institute and maintain a Fire Watch until those systems or equipment are operational. *- Limits fire ignition and propagation risks.*
Water Bylaw No. 2894	10.4.1	All fire hydrants and standpipes directly connected to Regional District Water Mains are the property of the Regional District. *- Outlines RDCK ownership and responsibility relating to water sources.*
	11.6.2 (f)	Notwithstanding the prohibitions in this Section, the Manager may authorize in writing the discharge of Regional District supplied water for the purposes of: training programs for fire fighters. *- Supports training opportunities for local fire fighters (see Section 5.4).*

The local plans listed in Table 4 are directly relevant to proactive wildfire resilience in EA-F. These plans were reviewed as part of the CWRP to address any gaps or limitations that inadequately address fire hazards or risk mitigation.

Table 4: Summary of local plans and policies that are directly relevant to the CWRP.

Plan	Description and *Relationship to CWRP*
EMERGENCY RESPONSE AND RECOVERY PLAN for the Regional District of Central Kootenay	Outlines structural and organizational requirements for coordinated response and recovery from emergencies in the RDCK, including: decision-making tools for evacuation or shelter in place; EOC levels and activation protocols; hazard and evacuation planning; fire planning including industrial, wildfire and structural fires; and, recovery planning. *Section 3.10 specifically deals with interface fires/wildfires, indicating that interface fires will be managed using unified command with the Ministry of Forests and local fire department(s) and other local fire departments, where applicable.*

Plan	Description and *Relationship to CWRP*
West Arm Provincial Park Fire Management Plan (2016)	This Fire Management Plan comprehensively analyzes social and environmental values at risk within West Arm Provincial Park, *discusses the potential impacts to those values as a result of a wildfire burning through the park, and recommends management strategies and locations of fuel management treatments to mitigate the risk of adverse impacts*.
Nelson Hydro **Vegetation Management Best Practices (2021)**	This plan identifies vegetation management procedures and best practices to protect the public, infrastructure, and values adjacent to Nelson Hydro transmission distribution lines. The plan identifies wildfire as an important consideration for vegetation management planning in the Nelson Hydro operating area, noting that within the drier ecosystems of this area, there is a possibility of frequent recurrence of fire. *Debris disposal specifications are identified, in order to prevent hazardous accumulations of woody debris after manual and mechanical vegetation treatments. A monitoring program is proposed in order to ensure debris disposal specifications are adhered to.*

2.3 HIGHER-LEVEL PLANS AND LEGISLATION

Table 5 lists higher-level plans and legislation that are relevant to wildfire planning and risk mitigation within EA-F and the surrounding area. These plans help guide where and how activities like resource extraction occur on the landscape, which can affect both wildfire threat and consequence. Depending on the location of any proposed fuel management treatment units from this Plan, fuel management prescriptions and prescribed / cultural burn plans may need to address these plans as they relate to on-the-ground restrictions and policies for forest modification.

Table 5: Description of higher-level plans and legislation and their relationship to the CWRP.

Plan/Legislation	Description and Relationship to CWRP
FRPA – Government Action Regulations (GARs)	Multiple GARs are present within EA-F's WUI. These should be considered and managed for appropriately, where present, at the site level through associated site level plans (e.g., Fuel Management Prescriptions). These include: ➢ *Non-legal Old Growth Management Areas* ➢ *Ungulate Winter Range partial-harvest* ➢ *Significant fish streams and rivers* ➢ *Community watersheds* ➢ *Regionally significant visual areas*
BC Provincial Open Burning Smoke Control Regulation	The Open Burning Smoke Control Regulation came into effect in September 2019 and governs open burning relating to land clearing, forestry operations and silviculture, wildlife habitat enhancement, and community wildfire risk reduction. ➢ *The entire WUI of EA-F is within a High Smoke Sensitivity Zone.* ➢ *All proposed treatment units are within the High Smoke Sensitivity Zone.*

Plan/Legislation	Description and Relationship to CWRP
Kootenay Boundary Higher Level Plan	The Kootenay Boundary Land Use Plan Implementation Strategy was completed in 1997, and was discussed in the previous CWPP. *Legal, spatially defined objectives for 'Connectivity Corridors', and 'Water Intakes Used for Human Consumption' apply within the AOI. A non-legal objective for fire-maintained ecosystem restoration also applies - this provision targets NDT4 ecosystems, which are present in 49% of EA-F's WUI.*
Selkirk Resource District Fire Management Plan	The Selkirk Resource District Kootenay Lake Fire Management Plan (FMP) (MFLNRORD, 2016) identifies values at risk on the landscape and prioritizes broad categories of values as 'themes' for categorizing response through the Resource Strategic Wildfire Allocation Protocol (RSWAP). The four themes are 1) Human Life and Safety, 2) Property and Critical Infrastructure, 3) High Environmental and Cultural Values, and 4) Other resource values (timber, rangelands, etc.). *The organization of values is intended to provide the information needed to make appropriate fire response decisions in complex emergency situations. This CWRP identifies values within the Plan area with the intent of using this information to make appropriate fire response decisions.*
BC Wildfire Act and Wildfire Regulation	The Wildfire Act and Wildfire Regulation define the legal responsibilities and obligations to which everyone in British Columbia is subject. When the BCWS places bans or restrictions in an area, the Wildfire Act and Regulation make them enforceable. [8] *Its key goal is to specify responsibilities and obligations on fire use, wildfire prevention, wildfire control, and rehabilitation.*[8]
Fire Chiefs' Association of BC and BC Wildfire Service MEMORANDUM OF AGREEMENT for INTER-AGENCY OPERATIONAL PROCEDURES AND REIMBURSEMENT RATES	Guides and facilitates the collaboration between the Province and fire departments or by outlining key information regarding resource requests, deployment and response procedures, remuneration guidelines, and other necessary details to effectively manage the partnership. The intent of this Agreement is to further improve the operating procedure, strengthening capacity while providing increased flexibility to share resources in British Columbia, with clear rules of engagement and reimbursement requirements. *Mutual aid agreements exist between BCWS and RDCK fire services. RDCK fire departments (including those in EA-F) routinely work with BCWS in*

[8] https://www2.gov.bc.ca/gov/content/safety/wildfire-status/about-bcws/governance/legislation-regulations

Plan/Legislation	Description and Relationship to CWRP
	response to incidents within and outside of Fire Protection and Response Areas.

SECTION 3: COMMUNITY DESCRIPTION

This section defines the planning area for this CWRP and provides general demographic information about EA-F. An understanding of population trends, land use patterns, and values at risk can help effectively direct FireSmart outreach and risk mitigation activities.

3.1 WILDLAND-URBAN INTERFACE

The Wildland-Urban Interface (WUI) is defined by FireSmart Canada as the zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels. For the purpose of the FireSmart Community Funding and Supports (FCFS) program, the 'eligible WUI' is considered as the area one kilometer from a structure density class greater than six structures per square kilometer. BC Wildfire Service generates WUI Risk Class maps and associated spatial data to assist with initiatives related to wildfire risk reduction, including the FCFS program.[9]

Field work, GIS analysis, and the recommendations for this CWRP cover only this one kilometer 'eligible WUI' which is entirely within EA-F and covers a total of 6,928 hectares (which includes foreshore areas of Kootenay Lake and Kootenay River) and includes residential, industrial, agricultural, recreational, and forested areas. Land use is guided by EA-F's Rural Official Community Plan Bylaw as discussed in Section . Importantly, as outward development occurs from the existing footprint, it is possible that the WUI will change with it.

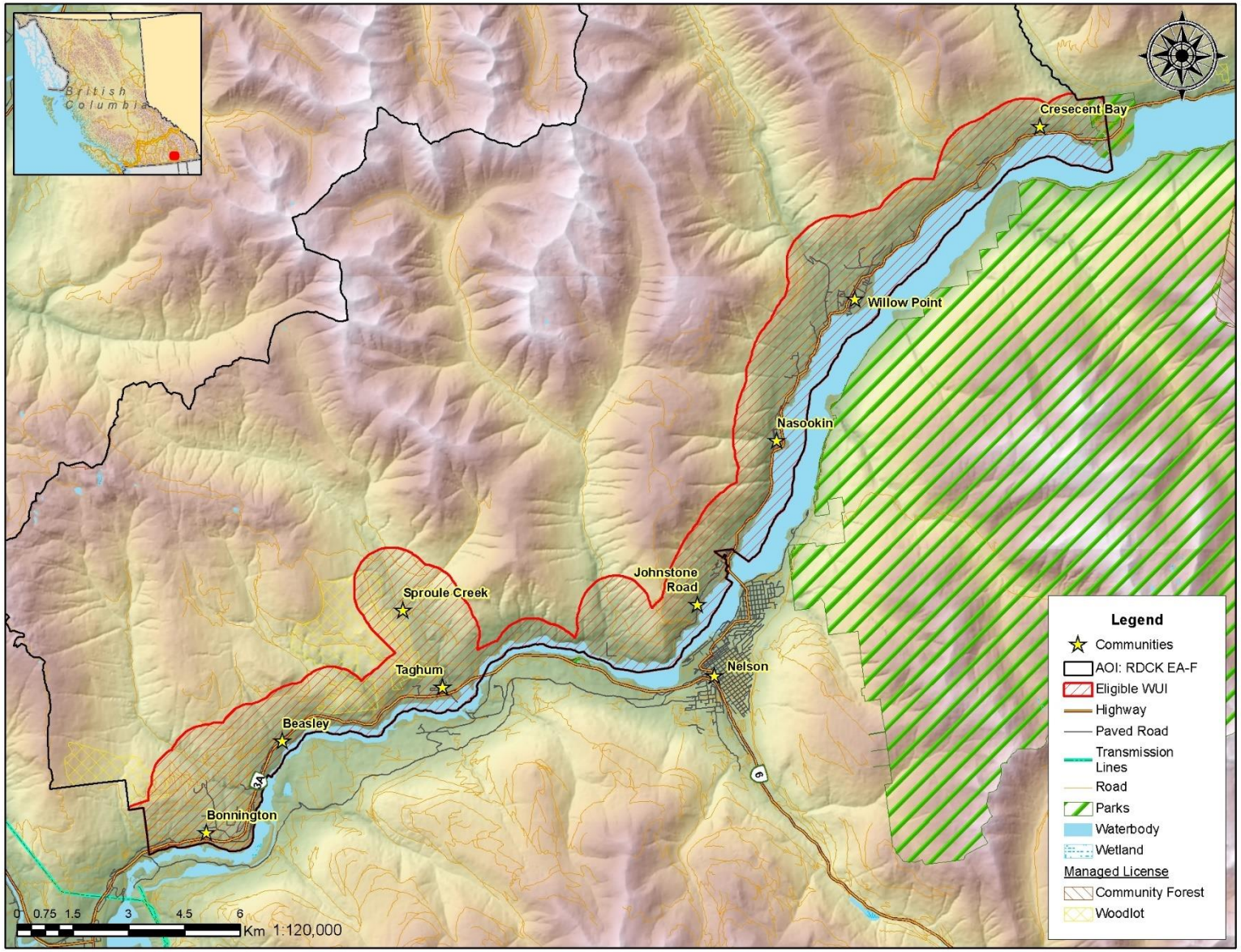
Map 1 shows an overview of EA-F's WUI and the communities within. The map shows the geographical breadth of the communities and the area this Plan covers – approximately 34 kilometres from Crescent Bay in the northeast to Bonnington in the southwest. Successful wildfire resilience efforts will need to be applied to all communities. An approximate breakdown of land ownership type by area is listed in Table 6, and shown on Map 2 and Map 3. Just under half (42%[10]) of EA-F's WUI is private land, while RDCK municipal and Crown/untitled provincial land make up almost all the rest of the WUI's ownership.

Table 6: Land Ownership within the eligible WUI of Electoral Area F.

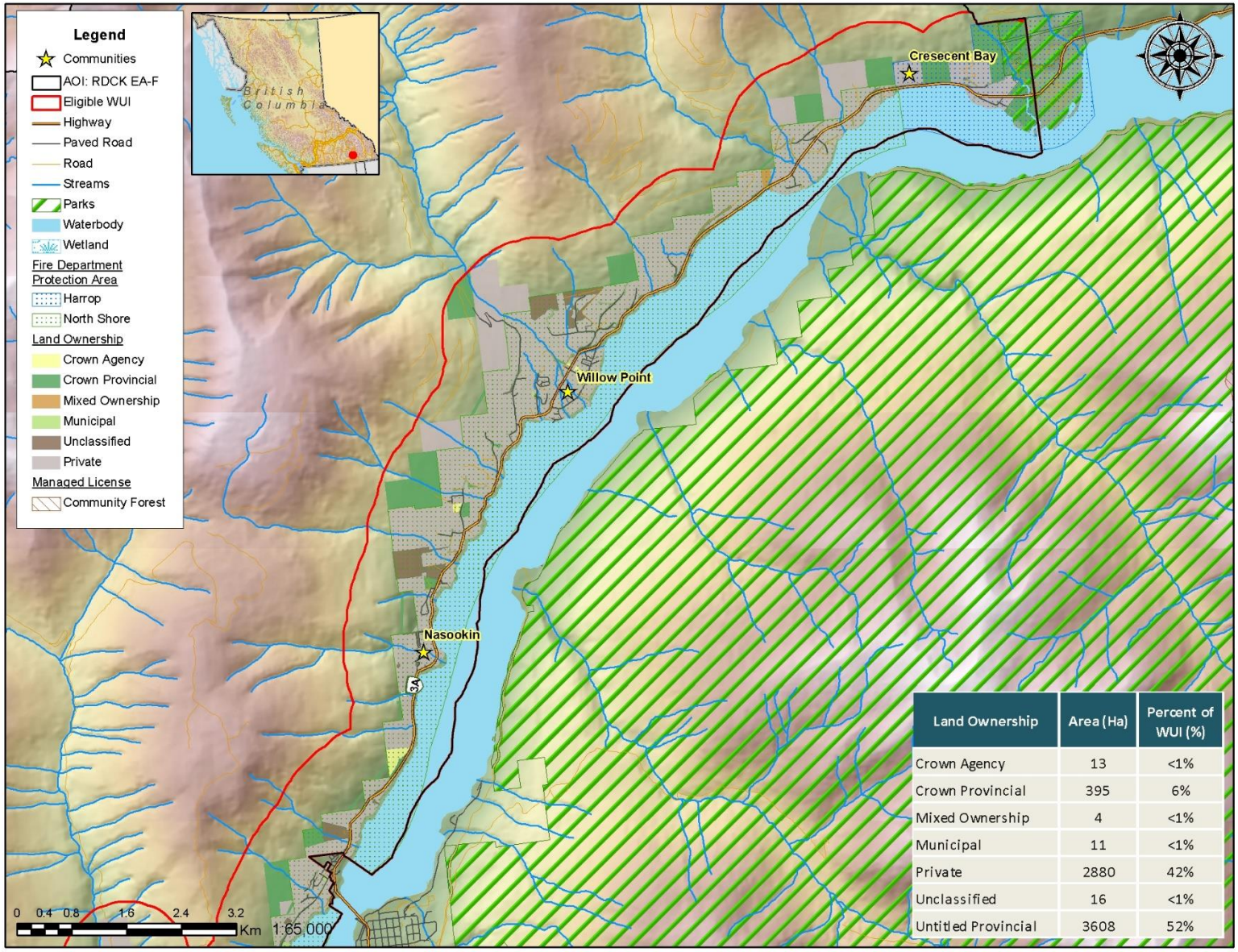
Land Ownership	Area (Ha)	Percent of WUI (%)
Crown Agency	13	<1%
Crown Provincial	395	6%

[9] Wildland Urban Interface Risk Class Maps - Province of British Columbia (gov.bc.ca)
[10] Private land total area equals Private Land plus Unclassified (strata land).

Land Ownership	Area (Ha)	Percent of WUI (%)
Mixed Ownership	4	<1%
Municipal	11	<1%
Private	2880	42%
Unclassified	16	<1%
Untitled Provincial	3608	52%
Total	**6928**	-

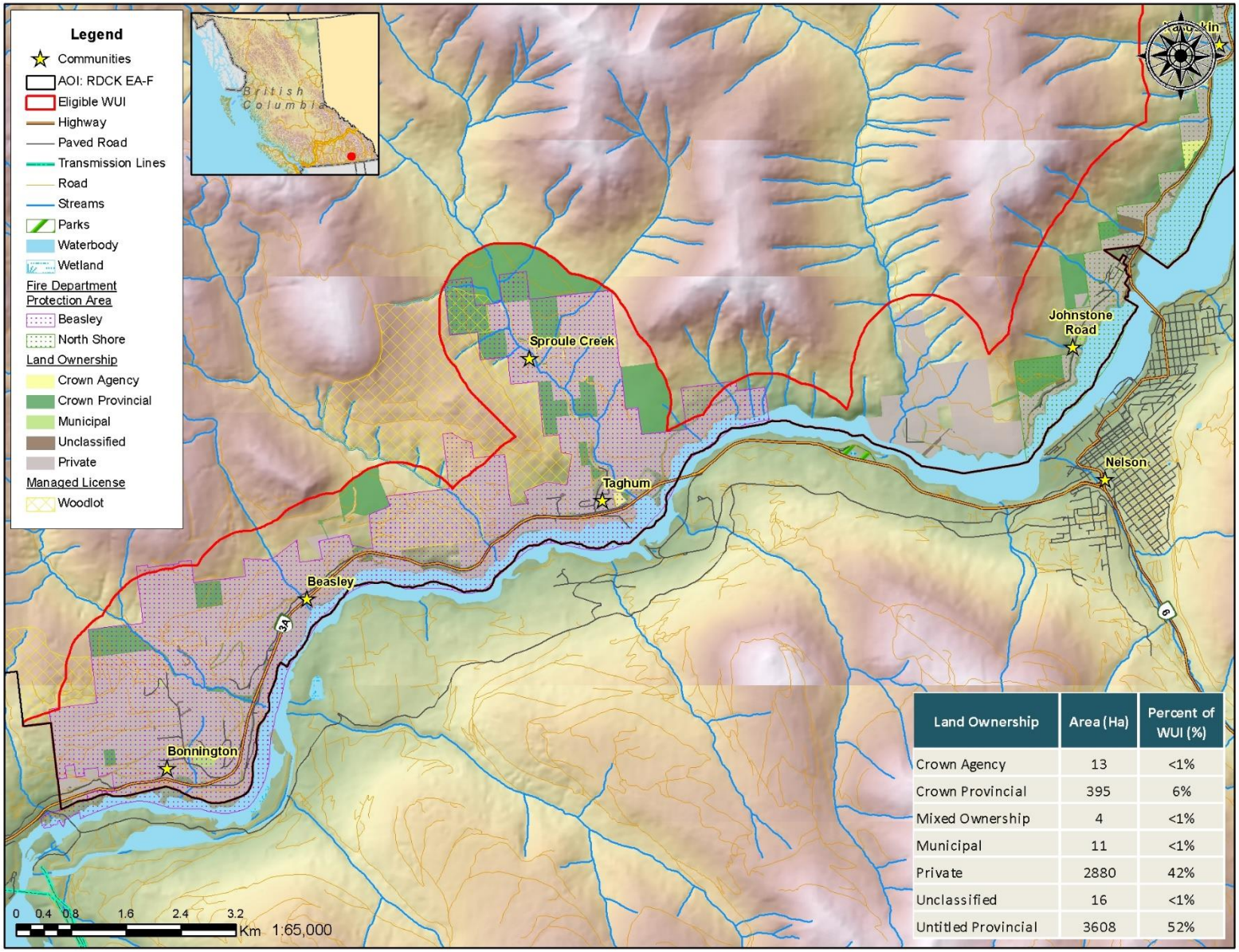


Map 1. Overview of RDCK Electoral Area F's Wildland Urban Interface (WUI). The 'eligible WUI' is the red diagonally lined polygon.



Land Ownership	Area (Ha)	Percent of WUI (%)
Crown Agency	13	<1%
Crown Provincial	395	6%
Mixed Ownership	4	<1%
Municipal	11	<1%
Private	2880	42%
Unclassified	16	<1%
Untitled Provincial	3608	52%

Map 2: Overview of RDCK Electoral Area F's eastern communities' WUI, with land ownership.



Land Ownership	Area (Ha)	Percent of WUI (%)
Crown Agency	13	<1%
Crown Provincial	395	6%
Mixed Ownership	4	<1%
Municipal	11	<1%
Private	2880	42%
Unclassified	16	<1%
Untitled Provincial	3608	52%

Map 3: Overview of RDCK Electoral Area F's western communities' WUI, with land ownership.

3.2 COMMUNITY DESCRIPTION

Located on the north shore of the Kootenay River and the West Arm of Kootenay Lake, EA-F includes the communities of Crescent Beach, Heddle, Six Mile/Willow Point/Duhamel, Nasookin/Ridgewood, Grohman, Taghum, Sproule Creek, Beasley, and Bonnington.[11] EA-F's northern border meets the Kokanee range of the Selkirk Mountains, a natural wilderness featuring granite peaks, deep river valleys, glaciers, and large subalpine lakes that bring fresh drinking water to the inhabitants below.[12]

At approximately 4,116 residents, EA- F is the third most populous of the 11 Electoral Areas in the RDCK. There has been a steady population growth over the years compared to other electoral areas, with a 4% increase from 2006 and 2016. A projected growth of 7% to 2025 will potentially increase the population to 4,390 people. Senior population growth will potentially increase the median age to 47.5.[13] Relevant socio-economic statistics on population, employment, housing, and education in EA- F are summarized in Table 7. They are not available for separate communities.

Table 7: Socio-economic statistics for RDCK Electoral Area F, as per the 2019 RDCK Community Profile Report. Bolded values have special relevance to the CWRP.

Metric in 2021 Census	Value
Population	
Total Population in 2021	4,116
Total Population in 2016	3,963
Population Density (people/km^2)	10.2
Population percentage change between 2016 to 2021	3.9
Number of people <14 years old	645
Number of people 15-64 years old	2,550
Number of people >65 years old	920
Median Age (years)	47.2[14]
Housing	
Total private dwellings	**1,766**
Private dwellings permanently occupied	**1,760**
Single detached house	1,515
Average Taxable Property Value	n/a
Average household size	2.3
Income and Employment	
Median Total Income of Households[15]	$88,000
Employment Rate	55.2%
Unemployment Rate	8.4%
Education	
No certificate, diploma or degree	310
Secondary school or equivalent	980
Post-secondary	2,150

[11] https://www.rdck.ca/EN/main/government/board-of-directors/electoral-areas.html
[12] https://www.rdck.ca/assets/Government/Bylaws/Land~Use-Planning/2214-F_OCP_Consolidated_2752.pdf
[13] https://www.rdck.ca/assets/Government/Documents/14_Electoral_Area_F_Community%20Summary.pdf
[14] The median age for BC is 43.0.
[15] In 2015, pre-tax. BC median is $69,995.

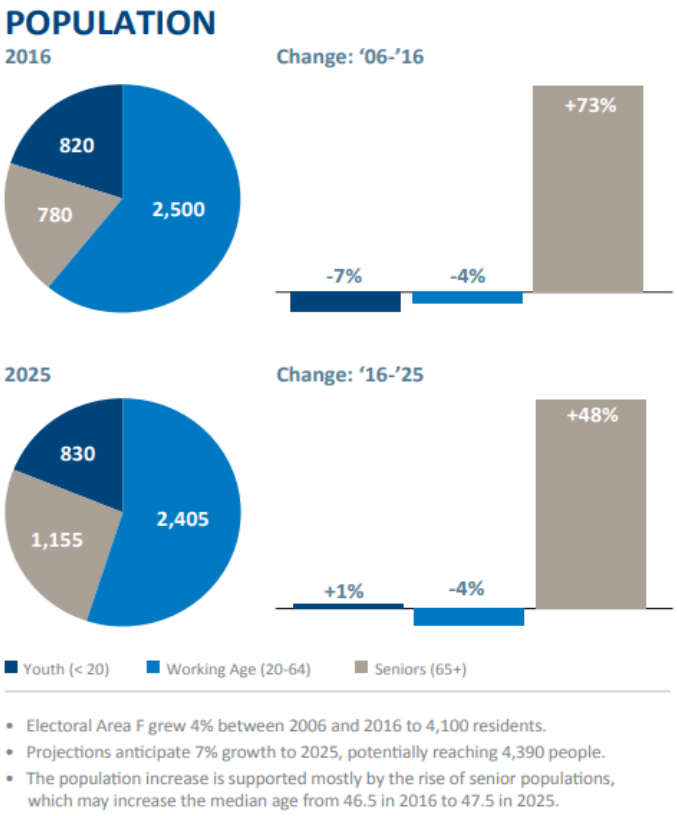


Figure 1: RDCK EA-F population change statistics - 2006-2016 and projected 2016-2026.

As shown in Table 7, most residents live in single-detached homes in rural communities, are between 15-64 years old, and have post-secondary education.

Population growth in nearby municipalities increases wildfire risk within the RDCK. More summer visitors increase the likelihood of a human-caused wildfire (increased ignition potential), and the consequence of a wildfire (more people to evacuate). The RDCK is home to a number of tourism hotspots with a focus on outdoor recreation, camping and boating.

Fire protection services are provided throughout EA-F by the Balfour-Harrop, Northshore, and Beasley Volunteer Fire Departments (also displayed on Map 2 Map 3). The Kootenay Lake Hospital, located in Nelson, is a Level 1 Community Hospital in the Kootenay Boundary health service area managed by Interior Health.[16]

The RDCK Emergency Program oversees the planning and implementation of emergency management in EA-F.

The following section gives a brief description of each community covered by this plan including number of residents and services provided. Each community can be seen in Map 1 – Map 3 in the previous section.

Crescent Beach

Crescent Beach, also called Crescent Bay, is a small community located on the West Arm of Kootenay Lake along Highway 3A. The locality is approximately 19 kilometres northeast of Nelson and only 1 km from Kokanee Creek Provincial Park. Due to its proximity to both Kokanee Creek Provincial Park and Kokanee Glacier Provincial Park, the area is a busy tourist and camping zone, and contains important spawning habitat for salmon. The community is characterized by moderately sized lakefront lots, with another neighbourhood upslope on Crescent View Drive. Along the highway there is a large timber frame

[16] https://www.interiorhealth.ca/search?type=All&search_api_fulltext=EA-F&f%5B0%5D=content_type%3Alocation

manufacturer and storage facility. Fire protection services are provided by the Balfour Harrop Volunteer Fire Department.

Figure 2. View of Kokanee Creek Provincial Park with Crescent Bay on the left.[17]

Heddle, Six Mile, Willow Point & Duhamel

Heddle, Six Mile, Duhamel, and Willow Point are adjacent communities along the north shore of the West Arm of Kootenay Lake. Located 11-12 kms northeast of Nelson on Highway 3A, the communities lie both along the shoreline below the highway as well as upslope of the highway. The overall area is densely populated and includes properties on the lakefront as well as upslope. Two mobile home communities are situated in the area – Bonadventure Trailer Park and Greenwood Mobile Home Court. Services include Kokanee Glacier Resort, Duhamel Store, North Shore Volunteer Fire Department Hall, Hellman Canoes & Kayaks, and École des Sentiers-Alpins. Six Mile Beach is a popular summer destination, with a long sand spit that extends to the middle of Kootenay Lake. Heddle is located above the Six Mile area on an upper bench; the Heddlestone neighbourhood has received community FireSmart recognition, and the Heddle neighbourhood is also engaged in FireSmart activities. Fire protection services are provided by the North Shore Volunteer Fire Department. The RDCK operates a water system and a wastewater system in the Duhamel community, with a groundwater well as the water source. The entire water system does not meet standardized requirements for fire protection. However, the Duhamel water system was reviewed by the Fire Underwriters Survey in 2014 and is now recognized as having a Dwelling Protection grade based on available fire flows from one hydrant.[18] The area is prone to flooding at the Duhamel Creek alluvial fan.

[17] https://www.nelsonkootenaylake.com/listing/kokanee-creek-provincial-park
[18] https://www.rdck.ca/EN/main/services/water/rdck-water-systems/duhamel-water-system.html

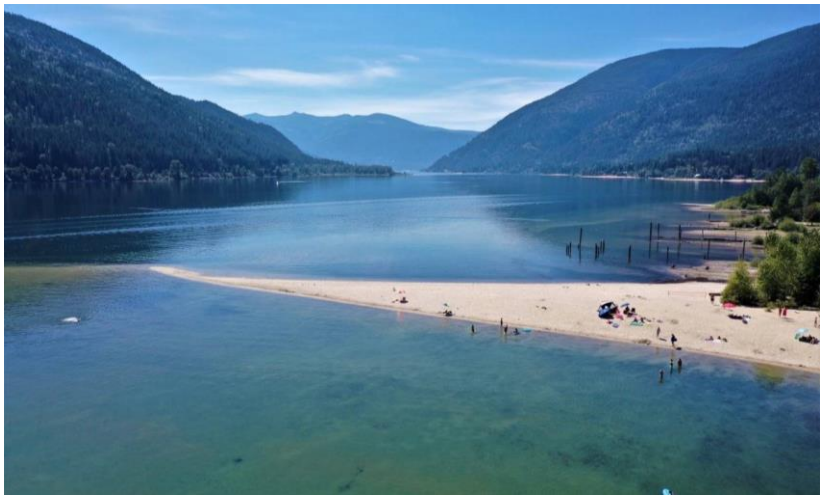


Figure 3. Six Mile Beach near communities of Heddle, Six Mile, Duhamel, and Willow Point[19]

Nasookin, 4 Mile & Ridgewood

Nasookin, also known as Nasu'kin, is a prominent landmark, being the remains of the largest Kootenay Lake sternwheeler, now converted into a home on the North Shore. It is located seven kilometers northeast of Nelson along Highway 3A. Nasu'kin was the Ktunaxa word for chief.[20] Next to the ship, Nasookin Road leads to the Nasookin Heights subdivision. Just north of Nasookin is the subdivision community of Ridgewood, also located uphill of Highway 3A. The Kootenay Lake Wildfire Base and Forestry offices are located at Ridgewood. Located between Nasookin and Ridgewood is Blaylock, with a landmark mansion and townhouse development above. Fire protection services are provided to these communities by the North Shore Volunteer Fire Department.

Figure 4: Nasookin boat house along Highway 3A[21]

[19] https://www.trailtimes.ca/news/dangerous-oasis-the-fatal-history-of-a-popular-kootenay-lake-beach/
[20] https://www.rdck.ca/assets/Government/Bylaws/Land~Use-Planning/2214-F_OCP_Consolidated_2752.pdf
[21] https://steamboats.com/museum/nasookinboathouse.html

Johnstone Road

Johnstone Road encompasses the lakeside and roadside homes along Johnstone Road, across from Nelson heading south from the Big Orange Bridge. There are some regional district parks with beach access that are popular by both residents and tourists (James Johnstone Regional Park; Pulpit Rock Access Regional Trail, a very popular local hiking trail) – some of these have had recently completed fuel treatments in them. This area is primarily residential, and includes the North Shore Community Hall, Nelson Search and Rescue Hall, and Nelson Christian School (private). This area is in the North Shore Fire Protection Area.

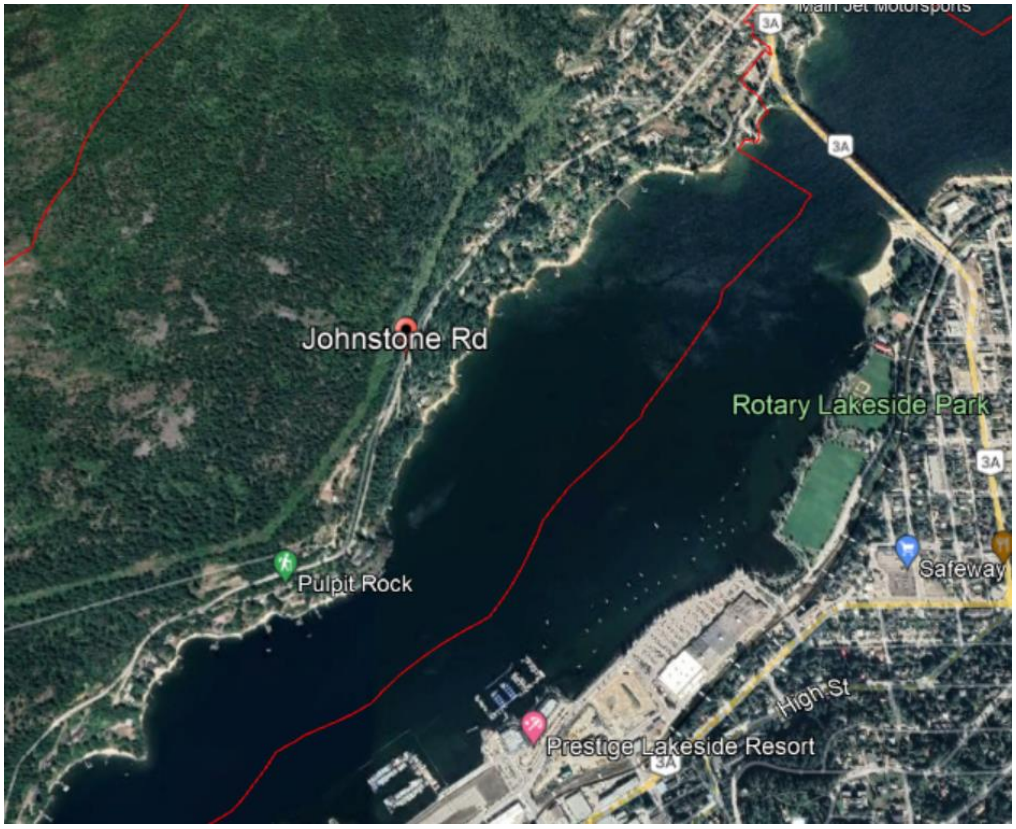


Figure 5: Google screen-shot of the Johnstone Road community (looking north).

Grohman

Located only five kilometers west of Nelson, the community of Grohman sits on the north shore of the West Arm of Kootenay Lake, at a point called Grohman Narrows. The community is accessible via Johnstone Road in Nelson, or Grohman Forest Service Road off Highway 6. Grohman Narrows is where Kootenay Lake turns into Kootenay River. Across from the community is Grohman Narrows Provincial Park, a day use park that protects habitat for provincially significant species, as well as a stand of old growth cottonwood. In EA-F, fire protection services are provided by the Beasley Volunteer Fire Department.

Figure 6. Grohman Narrows on the Kootenay River.[22]

Taghum & Sproule Creek

Taghum is an unincorporated community spanning both shores of the Kootenay River, located on Highway 6. It is approximately 35 kms northeast of Castlegar, and nine kilometres west of Nelson. The community is accessible via Nelson by crossing the river at the Taghum bridge, which was first built in 1914 and reconstructed in 1931. The bridge was raised seven feet in height to accommodate for the fluctuating water levels resulting from activities at the nearby Corra Linn Dam.[23] The area also includes a community hall and a gas station/convenience shop. Taghum has a history of unrest and public disputes, stemming from the Corra Linn Dam flooding a 33-acre Doukhobor farm in 1911. Sproule Creek is a small community located upslope of Taghum in the Sproule Creek valley, accessible via Sproule Creek Road off Highway 6. The area is home to a popular 9.8 km trail network.[24] Fire protection services are provided to Taghum and Sproule Creek by the nearby Beasley Volunteer Fire Department. Near Taghum, the RDCK operates the Woodland Heights water system.

[22] https://www.youtube.com/watch?v=04BakjaJA5k&ab_channel=KootenayFX
[23] https://en.wikipedia.org/wiki/Taghum
[24] https://westkootenayhiking.ca/sproule-creek/

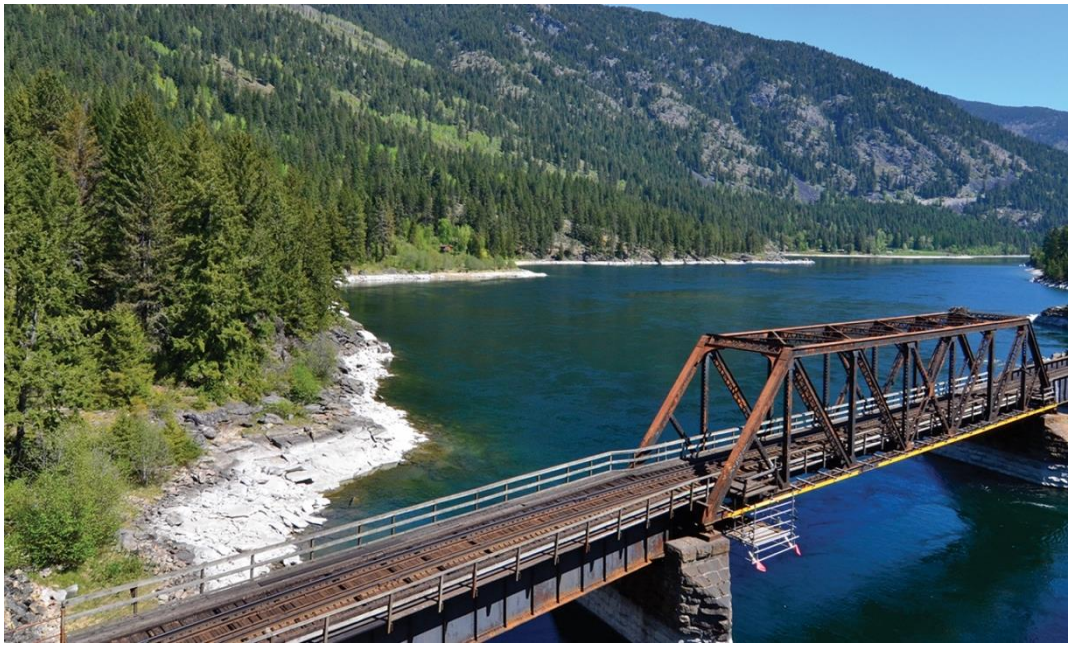


Figure 7. Railway bridge adjacent to Taghum Bridge.[25]

Beasley

Located upslope off Highway 6 via Beasley Road, the community of Beasley is west of Taghum by five kilometres, and northeast of Castlegar by 30 kms. The Beasley Fire Hall is situated in an easily accessible location directly off Highway 6, in between both access roads to the community. Beasley is home to a large bat hibernaculum, which is stated to be "one of the most significant bat sites in the country," according to local bat biologist, Dr. Cori Lausen.[26] In 2021, BC Timber Sales conducted logging of several cutblocks in the Smallwood Creek drainage above Beasley. These areas, for the next several years, may serve as fuel breaks in the event of a wildfire. Fire protection services are provided by Beasley Volunteer Fire Department.

[25] https://www.nelsonkootenaylake.com/listing/taghum-bridge
[26] https://www.castlegarnews.com/news/kaslo-biologist-questions-logging-at-unique-west-kootenay-bat-site-4736848

Figure 8. Viewpoint from above Queen Victoria Mine in Beasley, overlooking Kootenay River[27]

Bonnington

Bonnington, also known as Bonnington Falls, is located upslope of Highway 6, northeast of Castlegar by 26 kms and west of Nelson by 18 kms. The community was named after Bonnington Falls, a waterfall which was submerged by dams on the Kootenay River in the early 1900s. There are three dams in the immediate vicinity of the community: Corra Linn Dam, Upper Bonnington Dam, and Lower Bonnington Dam. All three dams are operated by FortisBC. Fire protection services are provided by Beasley Volunteer Fire Department. The Bonnington Regional Park sits within the upper Bonnington Community. The Bonnington Improvement District owns and operates a community water system that supports some fire hydrants.

[27] https://www.alltrails.com/canada/british-columbia/beasley/photos

Figure 8. Corra Linn Dam on Kootenay River near Bonnington[28]

3.3 VALUES AT RISK

Values at risk are the human, natural, or cultural resources that could be negatively impacted by wildfire. Protection of these values during a wildfire event is an important consideration for effective emergency response. Pre-identifying critical infrastructure and values at risk before an emergency event can ensure that essential services can be protected and/or restored quickly. As well, many activities that proactively assess and mitigate fire hazards around critical infrastructure and "Community Assets" are eligible for funding under the 2024 CRI FCFS Program Guide, which is addressed through Recommendation 14 (Section 5.3). Critical infrastructure includes buildings and structures that are essential to the health, safety, security, or economic wellbeing of the community and the effective functioning of government.

Table 8 lists critical infrastructure in EA-F's WUI as identified by the RDCK,[29] in meetings with EA-F staff, and outlined in the 2023 RDCK Community Risk Assessment. This list should not be considered as whole and complete, but rather a starting point for what should be considered as critical infrastructure. This list should be amended as required to add/remove new/excluded or outdated infrastructure so all are available for Community Asset FireSmart activities. The assets operated by the RDCK are the North Shore Fire Hall, Beasley Fire Hall, and North Shore Community Hall. Water and electric systems are discussed in more detail in Sections 3.3.1 and 3.3.2. Critical infrastructure FireSmart Assessments were outside the scope of this plan. At the time of writing, FireSmart Critical Infrastructure Assessments have been

[28] https://www.fortisbc.com/news-events/stories/celebrating-125-years-since-hydroelectricity-was-first-started-in-the-kootenays

[29] RDCK maintains a comprehensive database of critical infrastructure GIS point data and was provided as part of this Plan's development.

conducted on all firehalls within EA-F. Map 5 and Map 6 present a visual display of values at risk throughout the eligible WUI.

Table 8: Critical Infrastructure within EA-F and its WUI.

Map ID	Description	Community (if applicable)	Name
Government / Community			
F-25	Community Hall	Taghum	Taghum Hall
F-26	Community Hall	Northshore	North Shore Hall
F-29	School	Six Mile	Ecole des Sentiers-Alpins
F-68	School	Nelson (North Shore)	Nelson Community Christian School
F-67	Telecommunication	Bonnington	Communications Tower
n/a	Gas Station	Taghum (all EA-F)	Taghum Gas Station (Shell)[30]
Utilities			
F-96	Water - Control Building	Duhamel	Control Building
F-97	Water - Reservoir/Well	Duhamel	Reservoir
F-98	Water - Reservoir/Well	Woodland Heights	Reservoir
F-99	Water - Reservoir/Well	Woodland Heights	Supply Well
Emergency Response			
F-27	Fire Hall	North Shore	North Shore Fire Hall
F-28	Fire Hall	Beasley	Beasley Fire Hall

3.3.1 ELECTRICAL POWER

A large fire has the potential to impact electrical service by causing disruption in network distribution through direct or indirect processes. Direct heat from flames or damage from fallen trees associated with a fire event may cause power outages. There is one major transmission line and right-of-way that transects EA-F's WUI, from the northeast in Willow Point, travelling the north side of West Arm of Kootenay Lake and Kootenay River (where it briefly crosses Kootenay River just west of Nelson but then back over at Taghum). East of Nelson, the transmission line is just upslope from homes and structures. West of Nelson, it follows the shoreline of Kootenay River, downslope of most homes and structures. Transmission lines can provide excellent fuel breaks and access for first responders in the event of a wildfire – if the vegetation on them is regularly managed and kept in a low-hazard state. They can also be the source of fire ignitions – trees and other vegetation intruding into power lines can cause fires in multiple ways. A tree falling across a line can tear the line down and result in a downed line. A branch spanning two line conductors for a sufficient period of time may ignite the branch and also may produce high-energy, high-temperature arcs multiple feet in length. If the branch remains in contact and arcing, it can cause progressive damage that eventually breaks the line. It is important that both EA-F and RDCK lobby the electrical power providers in and influencing the community's WUI to regularly maintain their right-of-way's vegetation (see Recommendation #25 in Section 5.5).

Residential and commercial power throughout EA-F is provided by BC Hydro and FortisBC through a network of wood-pole distribution lines. BC Hydro and Fortis clear right-of-ways in the region every few

[30] The only source of fuel for first responders and residents in EA-F.

years and conduct ongoing maintenance as needed. However, there are many instances where both the regional district/MOTI and private landowners have highly flammable vegetation and/or unmaintained conifer trees growing in close proximity to power poles and distribution lines.

Having secondary power sources for critical infrastructure is important to reduce community vulnerability in the event of an emergency that cuts power for days, or even weeks. The Beasley Fire Hall recently acquired a backup generator, and it is not known what other critical infrastructures have ones as well. It is recommended that RDCK and EA-F review additional critical infrastructure and invest in back-up generators as required, as well as lobby privately owned infrastructure to do so as well (see Recommendation #29 in Section 5.6).

3.3.2 WATER AND SEWAGE

The RDCK operates water and wastewater systems for Taghum and Willow Point. All other properties have individual wells or surface water intakes and private septic for sewage disposal.

Hydrants and standpipe locations within the WUI are shown below on Map 4. Hydrants are in RDCK water serviced areas Taghum and Willow Point, and a private hydrant system is in Bonnington. Surface water sources are plentiful throughout the WUI and contribute to water availability for firefighting, although there are both seasonal drought/low water and access constraints for many. The most reliable natural water sources for EA-F would be Kootenay Lake and the Kootenay River. See Section 5.4 for recommendations related to fire department resources.

EA-F Fire Response Area Volunteer Fire Departments (VFD; Beasley and North Shore) noted the following regarding the supply of water available for fire response within their response areas: [31]

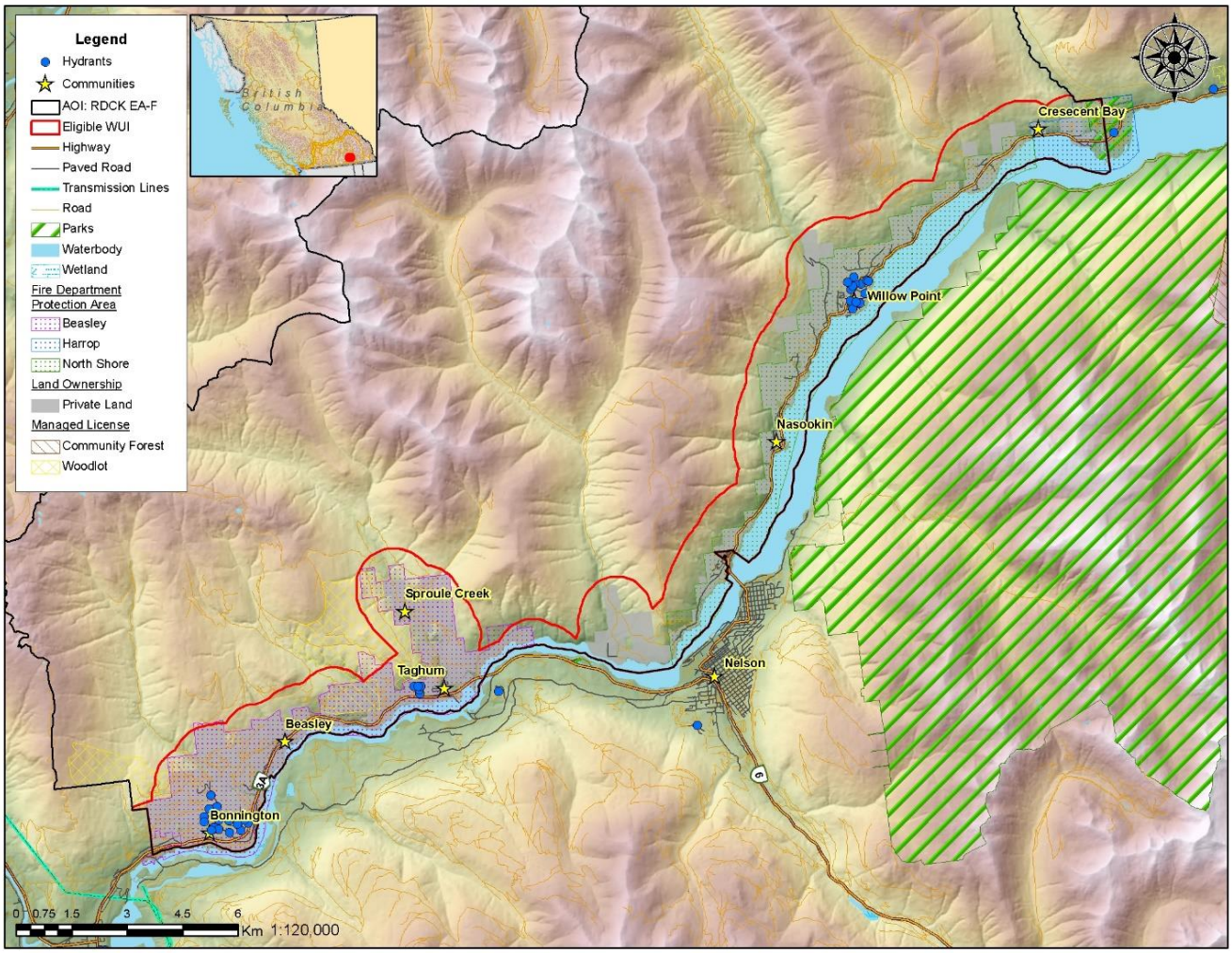
- Beasley VFD
  - *Hydrants*: Bonnington fire hydrants have good pressure and are generally reliable; the hydrants and standpipes in Taghum are limited in supply.
  - *Water Shuttling*: Water shuttling is effective, especially in those areas where a hydrant or drafting site is relatively close by. The further away from a hydrant or a fill site, the longer the turnaround time and the higher the likelihood of a delay or disruption.
  - *Drafting Sites*: Are mapped; include rivers/streams within the response area, but very few places where they can be accessed; sources most often used are the hydrants in Bonnington and/or a drafting site on private property adjacent to Taghum Community Hall.
- North Shore VFD
  - *Hydrants*: North Shore has one hydrant that provides appropriate pressure, on Tees Road. All other hydrants in the area are considered limited resources due to variable or limited flow rates and/or pressure.

[31] Information provided to B.A. Blackwell & Associates from Fire Departments via information gathering questionnaire.

- *Water Shuttling*: Shuttling time, once established, is variable based on the water supply proximity to the incident.
- *Drafting Sites*: Kootenay Lake is the primary choice currently with several sites available in our area. They are public access or require private property access. Access can depend on weather, public use, etc.

➢ Balfour – Harrop VFD

- *Hydrants:* The Crescent Bay Area does not have any hydrants. Grandview (north of EA-F) has one hydrant that is utilized.
- *Water Shuttling:* Shuttled from the hydrant at Grandview.
- *Water Drafting:* Drafted from Kootenay Lake at Crescent Beach.



Map 4: Hydrants and standpipes for communities in Electoral Area F (RDCK GIS data).

3.3.3 HAZARDOUS VALUES

Hazardous values are defined as values that pose a safety hazard to emergency responders and include large fuel / propane facilities, landfills, rail yards, storage facilities containing explosives, pipelines, etc. Anywhere combustible materials, explosive chemicals, or gas/oil are stored can be considered a hazardous value. Protecting hazardous values from fires is important to preventing interface fire disasters.

No hazardous values were identified within EA-F's WUI, but it was noted in the 2023 RDCK Community Risk Assessment that hazardous materials are transported by truck and train throughout the area (Highway 6 and Highway 3A). It is also very likely that both industrial and hobby farms store gas, oil, and/or fertilizer.

Accidental ignitions from train tracks and equipment are also a fire risk. Vegetation management practices along rail lines has the ability to exacerbate a fire hazard if deciduous and/or coniferous vegetation and cured grasses are being brushed and left in accumulations beside the tracks. This presents more of a concern where the vegetation on private properties adjacent to the tracks has a coniferous component or cured grass, which can support fast spreading fires. This is of special concern in the communities west of Nelson (Taghum, Beasley, and Bonnington), where the rail corridor runs along the Kootenay River shoreline adjacent to homes and property. Recommendations associated with industry stakeholders are discussed in Section 5.5).

3.3.4 CULTURAL VALUES

There are documented and registered historic and archeological sites within the WUI and a high potential for additional sites to be found given the long history of use by First Nations. Known archeological sites are protected under the Heritage Conservation Act, which applies to both private and public lands.

RDCK, EA-F, and/or MOF should continue to consult with applicable First Nations well before development and implementation of any proposed fuel prescriptions to allow for meaningful review and input, as well as collaborative opportunities – cultural burning by First Nations has a long documented and orally spoken history in the area. Archeological assessments may be required to ensure that known or unknown cultural resources are not inadvertently damaged or destroyed, and that First Nations strategies for land management in their traditional territory are complied with.

3.3.5 HIGH ENVIRONMENTAL VALUES

There are multiple high environmental values throughout the RDCK. Specific to EA-F, there is significant proximity to provincial parks and regional parks. Additionally, EA-F's WUI has significant overlaps with species and ecosystems at risk identified through the B.C. Conservation Data Center and by the federal government (Table 9), including a significant population of bats. Of these species, three are considered at

risk and include the fringed myotis, northern myotis, and Townsend's big-eared bat.[32] All fuel management prescriptions must identify and mitigate potential impacts to ecosystems or species at risk and may require rationales and/or mitigation measures for tree removal in some areas.

Approval for adding EA-F to the RDCK Local Conservation Fund Establishment Bylaw is currently being sought through the Alternative Approval Process (AAP). A Local Conservation Fund is a local government service that creates dedicated funding to support local high-priority conservation projects. This would benefit EA-F in wildfire mitigation planning and consideration of conservation priorities. Since 2014, a Local Conservation Fund has already been in effect in Electoral Areas A, D, and E as an RDCK provided service. This Local Conservation Fund on Kootenay Lake has provided grants totaling over half a million dollars and raised an additional 2.45 million dollars in financial and in-kind support from other funders.[33]

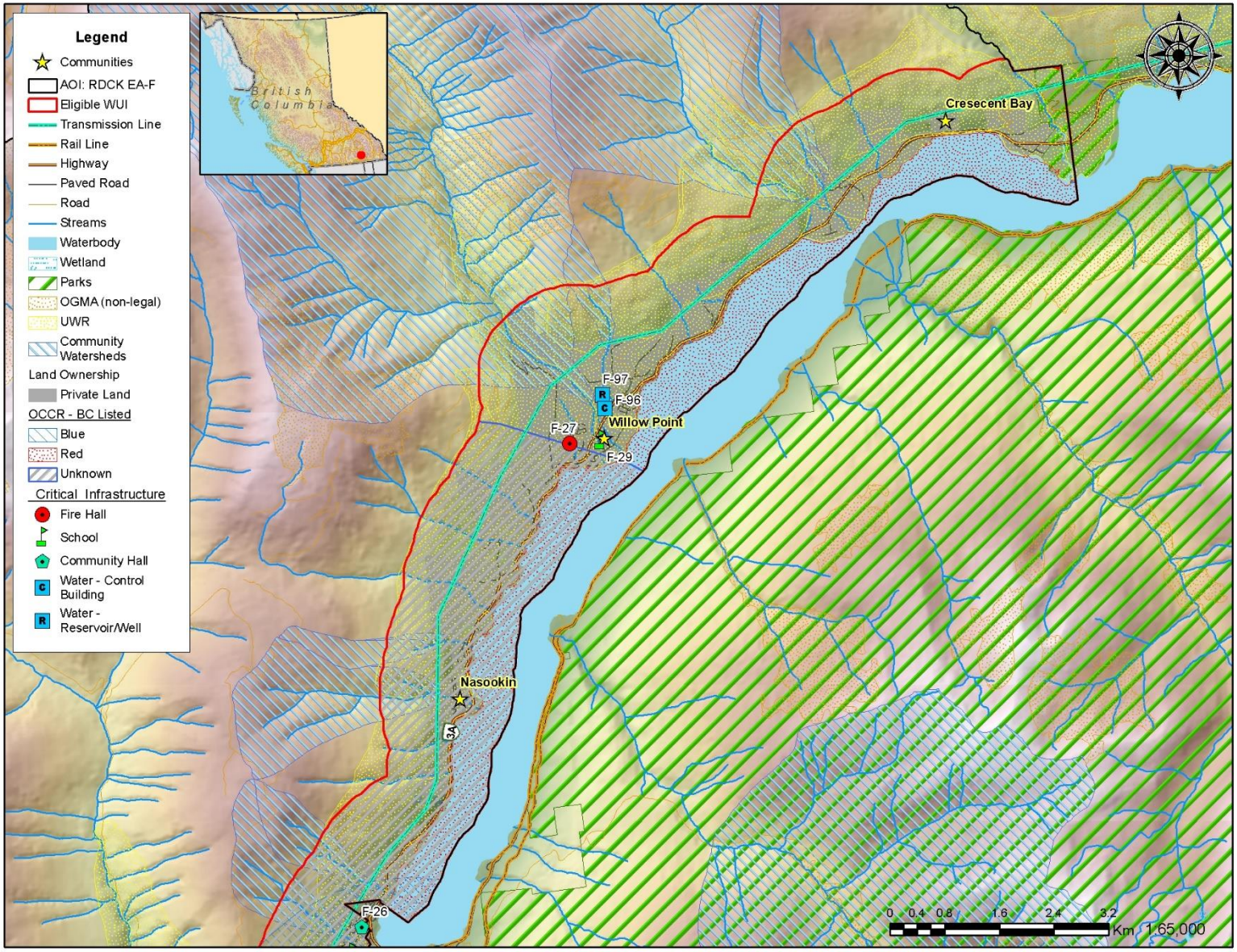
Table 9. Species and Ecosystems at Risk in the WUI – BC Conservation Data Center. *Denotes Critical Habitat for Federally Listed Species at Risk

Common Name	Scientific Name	Category	BC List	Habitat Type
White Sturgeon (Upper Kootenay River Population)	Acipenser transmontanus pop. 1	Vertebrate Animal	Red	RIVERINE: Big River; Moderate Gradient; Low Gradient; Pool. LACUSTRINE: Deep Water
Spurless Touch-me-not	Impatiens ecornuta	Vascular Plant	Yellow	TERRESTRIAL
Western Screech-owl, Macfarlanei Subspecies	Megascops kennicottii macfarlanei	Vertebrate Animal	Blue	TERRESTRIAL: Urban
Monardella	Monardella odoratissima ssp. discolor	Vascular Plant	Unknown	TERRESTRIAL
Western Skink	Plestiodon skiltonianus	Vertebrate Animal	Blue	TERRESTRIAL: Rock Outcrop, Coarse Talus/Boulders, Grassland/Herbaceous, Forest Needleleaf.

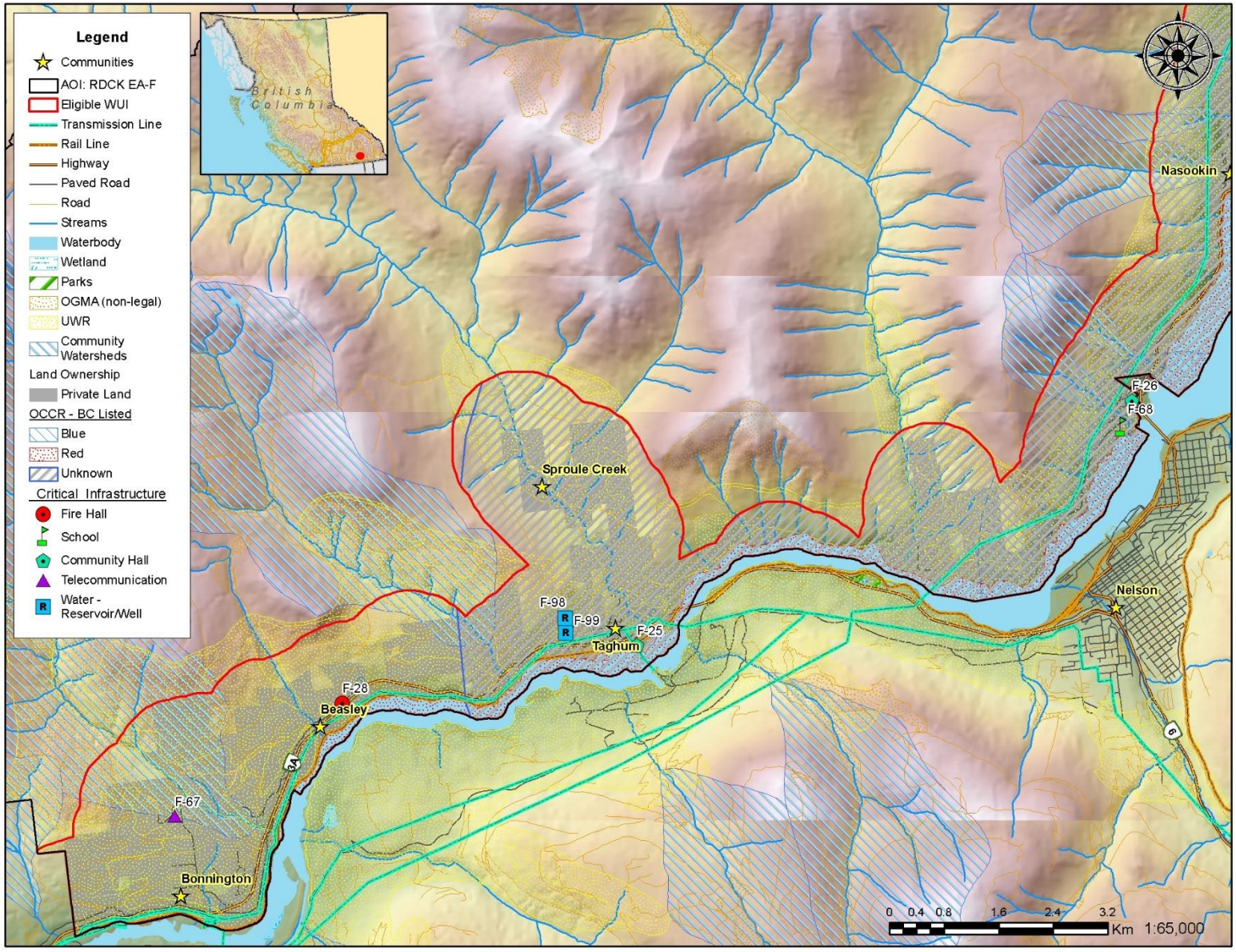
3.3.6 OTHER RESOURCE VALUES

There are multiple other important resource values associated with the land base, including forestry (woodlots), agriculture (commercial and hobby farms), recreation (including a designated BC Recreation Site near Taghum), hydroelectric power generation, and tourism. Any fuel management within EA-F's WUI should consider the impact on any of these additional values, and consult with appropriate land managers and organized recreation groups in the area. Recommendations associated with industry stakeholders are discussed in Section 5.5.

[32] https://www2.gov.bc.ca/assets/gov/environment/pesticides-and-pest-management/managing-pests/bats/kcbp_bats.pdf
[33] https://kootenayconservation.ca/area-f-lcf-expansion/



Map 5: Values at risk within EA-F's eastern WUI area.



Map 6: Values at risk within EA-F's western WUI area.

SECTION 4: WILDFIRE RISK ASSESSMENT

This section summarizes the factors that contribute to local wildfire risk in EA-F. Section 4.1 discusses the wildfire environment in the WUI: focusing on topography, fuel, and weather. Section 4.2 discusses wildfire history in the area and wildfire response data from local fire crews. Section 4.3 uses updated fuel types combined with wildfire threat assessments and an office-based analysis to update the local wildfire risk for the eligible WUI.

The local wildfire risk assessment helps to identify the parts of the eligible WUI that are most vulnerable to wildfire. The CWRP risk assessment complements the broader scale Emergency Response and Recovery Plan for the Regional District of Central Kootenay.

The relationship between wildfire risk and wildfire threat is defined as follows:

Wildfire Risk = Probability X Consequence

Where:

Wildfire risk is defined as the potential losses incurred to human life and values at risk within a community in the event of a wildfire.

Probability is the threat of wildfire occurring in an area and is expressed by the ability of a wildfire to ignite and then consume fuel on the landscape. An area's *wildfire threat* is controlled primarily by:

- Topography: Slope and terrain features can influence rate of spread; aspect can affect pre-heating and other fuel properties
- Fuel: Amount, vertical and horizontal arrangement, type, and dryness
- Weather: Temperature, relative humidity, wind speed and direction, precipitation

Consequences refer to the repercussions associated with fire occurrence in a given area. Higher consequences are associated with densely populated areas, presence of values at risk, etc.

4.1 WILDFIRE ENVIRONMENT

There are three environmental components that influence wildfire behavior: topography, weather, and fuel. These components are generally referred to as the 'fire behaviour triangle' (Figure 9); the ways in which they individually influence the wildfire environment of the area will be detailed below. Fuel is the only component of the fire triangle that can be reasonably managed through human intervention. It is important to recognize that in WUI fires, wildland fuels (trees, shrubs, branches, etc.) are not the only fuel available to the fire – houses and their exterior construction materials and landscaping vegetation, cars, barbeque propane tanks, and more (anything that is flammable or combustible) is available fuel.

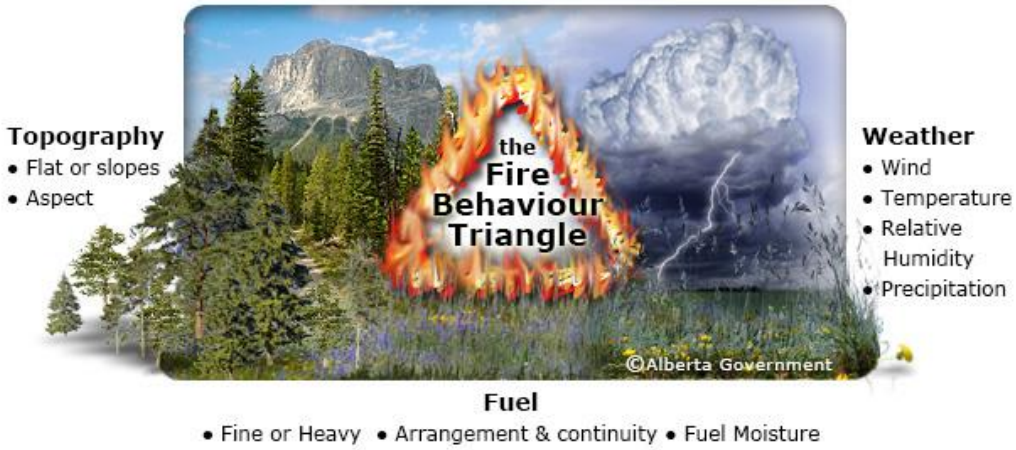


Figure 9: Graphic display of the fire behaviour triangle, and a subset of characteristics within each component.[34]

4.1.1 TOPOGRAPHY

Slope steepness influences the fire's trajectory and rate of spread and slope position relates to the ability of a fire to gain momentum uphill. Other factors of topography that influence fire behaviour include aspect, elevation, and configuration of features on the landscape that can restrict (i.e., water bodies, rock outcrops) or drive (i.e., valleys, exposed ridges) the movement of a wildfire.

Most homes and structures in EA-F communities that are located along the shorelines of Kootenay Lake and Kootenay River are situated along the lower slope adjacent to the lake/river shore. Often, these lower slopes are more subdued, but for some communities (or even just a part of them), the lower slopes can be quite steep (e.g., Crescent Bay, Beasley, and Bonnington). Additionally, communities such as Sproule Creek, Bonnington, Beasley, and Willow Point) have homes and structures that are located uphill from the shoreline, on a mix of moderate and steeper slopes, and are intermixed with the wildland environment. Thus, while most homes and structures in EA-F are generally located in the lower slope of their respective macro-topological features (which is naturally advantageous from a fire spread standpoint), topography presents a situationally specific risk to some neighbourhoods and homes at the site level.

On a larger scale, the narrow valley of the west arm of Kootenay Lake and Kootenay River can funnel winds to drive a fire both up (east) and down (west) the valley. Additionally, tributary rivers and adjacent creek draws (often running up/down the valley slopes of the side drainages) provide additional convective features that can drive the up valley and upslope spread of fire.

Map 7 and Map 8 display the slope, by slope classes, for EA-F's WUI. Table 10 shows the percent of the WUI by slope steepness class, with corresponding *fire behavior* implications. Nearly half (52%) of the WUI has slopes >30% and would experience accelerated rates of fire spread *uphill*. 48% of the WUI has slopes <30%, and would experience little slope-driven flame and fuel interaction.

[34] Graphic adopted from the Province of Alberta.

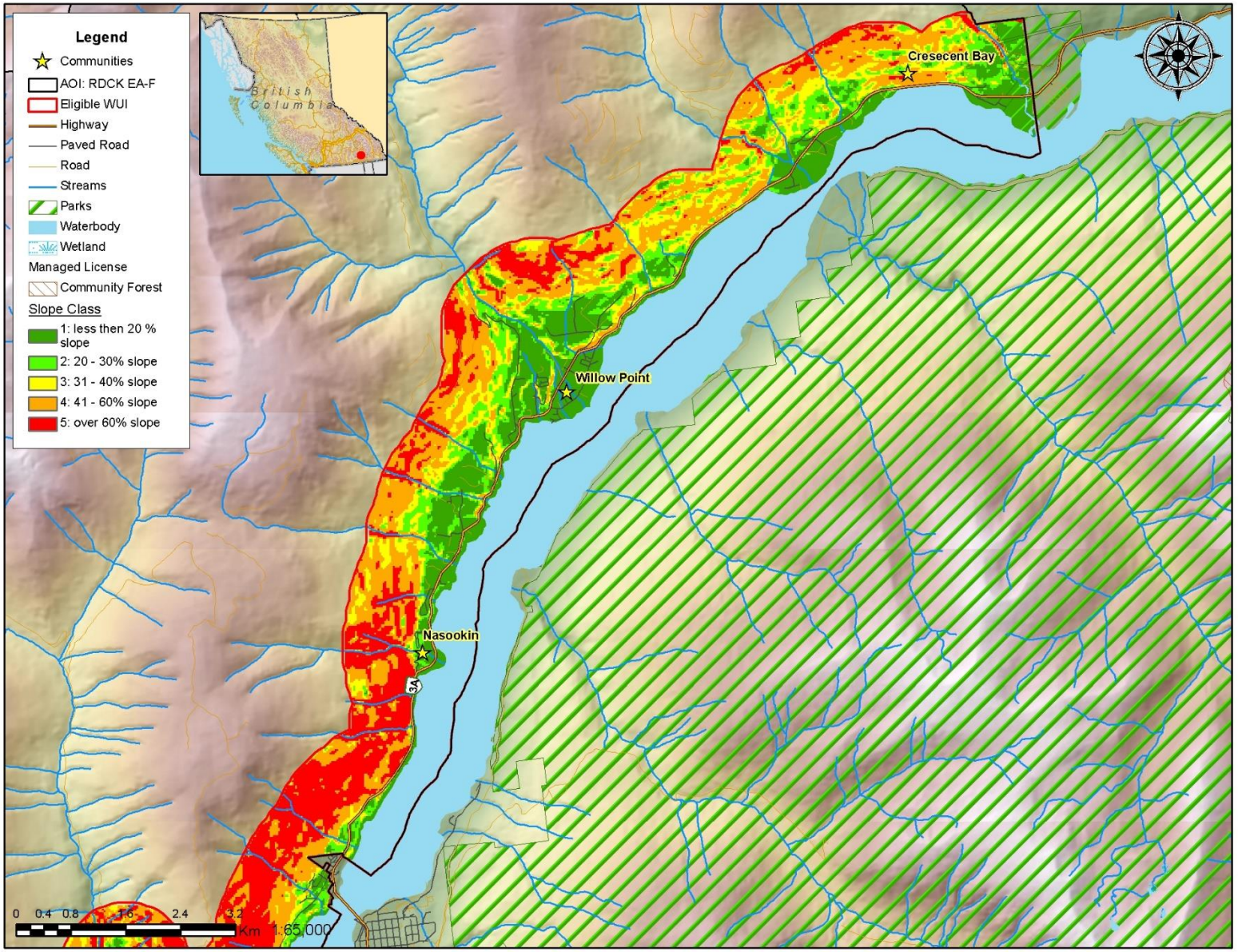
Table 10. Slope Percentage and Fire Behaviour Implications.

Slope	Percent of Eligible WUI	Fire Behaviour Implications
<20%	33%	Very little flame and fuel interaction caused by slope, normal rate of spread.
21-30%	15%	Flame tilt begins to preheat fuel, increase rate of spread.
31-40%	16%	Flame tilt preheats fuel and begins to bathe flames into fuel, high rate of spread.
41-60%	23%	Flame tilt preheats fuel and bathes flames into fuel, very high rate of spread.
>60%	12%	Flame tilt preheats fuel and bathes flames into fuel well upslope, extreme rate of spread.

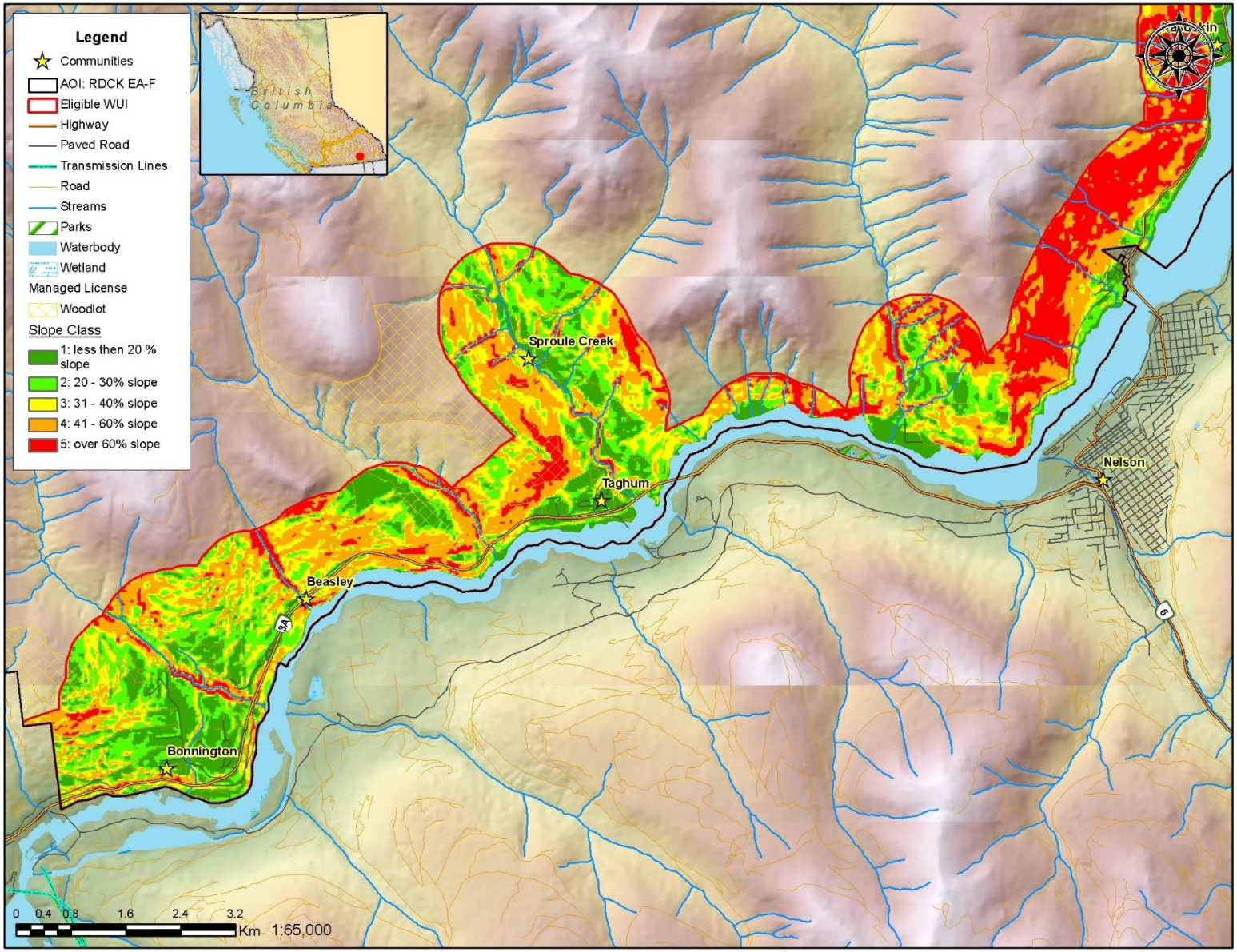
Slope-associated *fire risk* is dependent upon the slope position (location) of values, described below in Table 11. Values located in the middle and upper slopes are threatened by faster rates of fire spread due to the pre-heating of fuels from fire below and longer flame lengths reaching uphill. As discussed above, most of EA-F's communities are located at valley and slope bottoms, on grades <30%, so would not have increased fire behaviour risks influenced by topography alone. However, there are neighbourhoods, homes, and structures that are middle slope, and these would be threatened by faster rates of slope-driven fire spread.

Table 11. Slope Position of Value and Fire Behaviour Implications.

Slope Position of Value	Fire Behaviour Implications
Bottom of Slope/ Valley Bottom	Impacted by normal rates of spread.
Mid Slope - Bench	Impacted by increase rates of spread. Position on a bench may reduce the preheating near the value. (Value is offset from the slope).
Mid Slope – Continuous	Impacted by fast rates of spread. No break in terrain features affected by preheating and flames bathing into the fuel ahead of the fire.
Upper 1/3 of slope	Impacted by extreme rates of spread. At risk to large continuous fire run, preheating and flames bathing into the fuel.



Map 7: Slope, by slope classes, for RDCK EA-F's eastern WUI.



Map 8: Slope, by slope classes, for RDCK EA-F's western WUI.

4.1.2 FUEL

The ecological context of wildfire and the role of fire in the local ecosystem under both current and historical conditions is an important basis for understanding the current and future wildfire threat to a community. Also, the type and amount of fuel available for a wildfire is a major driver of the fire's potential fire behaviour. Fuel is the only component of the fire triangle that can be realistically managed through human intervention. This section analyses and discusses available *wildland* vegetative fuels within EA-F's WUI.

The forested slopes both within and outside EA-F's WUI have experienced a significant amount of past, recent, and ongoing logging. Past logging, combined with historically suppressed wildfires throughout the 1900s, has resulted in a relatively continuous distribution of even-aged conifer stands. However, within EA-F's WUI, some of these forested stands have seen recent logging that has begun breaking up the even-aged continuity, something that can reduce wildfire behaviour by forcing fire 'to the ground'. Importantly, management of reduced slash (harvest debris) in these WUI harvested areas is paramount towards further reducing their wildfire behaviour and potential risk to nearby neighbourhoods and adjacent communities.

The Canadian Forest Fire Behaviour Prediction (FBP) System outlines sixteen fuel types based on characteristic fire behaviour under defined conditions.[35] BC Wildfire Service maintains a provincial fuel type layer that was confirmed and updated for this CWRP. It should be noted that mixed conifer stands[36] in the interior wet belt, of which EA-Fs WUI is within, are one of the specifically identified areas of uncertainty and knowledge gaps within the FBP system and are considered, at best, a poor match with any fuel type.[37] The FBP system was almost entirely developed for boreal and sub-boreal forest types, which do not occur within the study areas. Furthermore, fuel types depend heavily on Vegetation Resource Inventory (VRI) data, which is gathered and maintained to inform timber management objectives, not fire behaviour prediction. Although a subjective process, the most appropriate fuel type was assigned based on research, experience, and practical knowledge; this system has been successfully used within BC, with continual improvement and refinement, for 25 years.[38] In some areas, aerial imagery is of low spatial resolution and/or ground access was impossible, making fuel type assessment difficult.

Table 12 lists the percentage of fuel types in EA-F's WUI.[39] Due to the steep south-facing aspect of the entire north shore slope along Kootenay River and Kootenay Lake, the dominant C-5 and C-7 fuel types present generally reflect this warmer and drier aspect – more open, more grass, and rocky outcrops. The

[35] Forestry Canada Fire Danger Group. 1992. Development and Structure of the Canadian Forest Fire Behavior Prediction System: Information Report ST-X-3.
[36] Species such as western white pine and western larch growing in multi-story canopies, usually associated with Douglas-fir, redcedar, lodgepole pine, or other species.
[37] Natural Resources Canada. 2018. British Columbia Wildfire Fuel Typing and Fuel Type Layer Description. Daniel D.B. Perrakis, George Eade, and Dana Hicks
[38] Perrakis, D, G. Eade and D. Hicks. 2018. Canadian Forest Service Pacific Forestry Centre. British Columbia Wildfire Fuel Typing and Fuel Type Layer Description
[39] Larch produces very little persistent litter, so the D-1 fuel type likely overestimates fire spread potential of these stands. In mixed-species stands with other conifers, larch is considered to contribute to the deciduous portion of the stand, implemented using the M-1/M-2 fuel types. (Natural Resources Canada. British Columbia Wildfire Fuel Typing and Fuel Type Layer Description)

fuel types present that are considered most hazardous in terms of fire behaviour (of which there is very little) are C-3 and O-1a/b (can include C-5 and C-7 under certain conditions). C-3 fuel types can support passive and active crown fires, and under extreme wildfire conditions can exhibit some of the highest wildfire risk associated to fuel type. Extensive areas of O-1a/b, C-5, or C-7 can support a rapidly spreading surface fire capable of damage or destruction of property and jeopardizing human life, but the fire behaviour potential in these fuel types is recognized as highly variable dependent on the percentage of grass and shrub that is cured and the wind speed. An M-1/2 fuel type can be considered hazardous depending on the proportion of conifers within the forest stand, and/or the amount of dead and downed material. D-1/2 stands (of which there is little in EA-F's WUI) are dominated by deciduous species, and are generally considered the least hazardous forest type because of their higher moisture content and lack of flammable ladder fuels. The hazard of a D-1/2 stand can greatly increase if there is an accumulation of surface fuels, cured grasses, or flammable shrubs. Recent spring cross-over conditions[40] (called the 'spring dip') have allowed for destructive forest fires in deciduous-dominated stands. Detailed fuel type descriptions and their associated wildfire risk can be found in Appendix B-1: Fuel Typing Methodology.

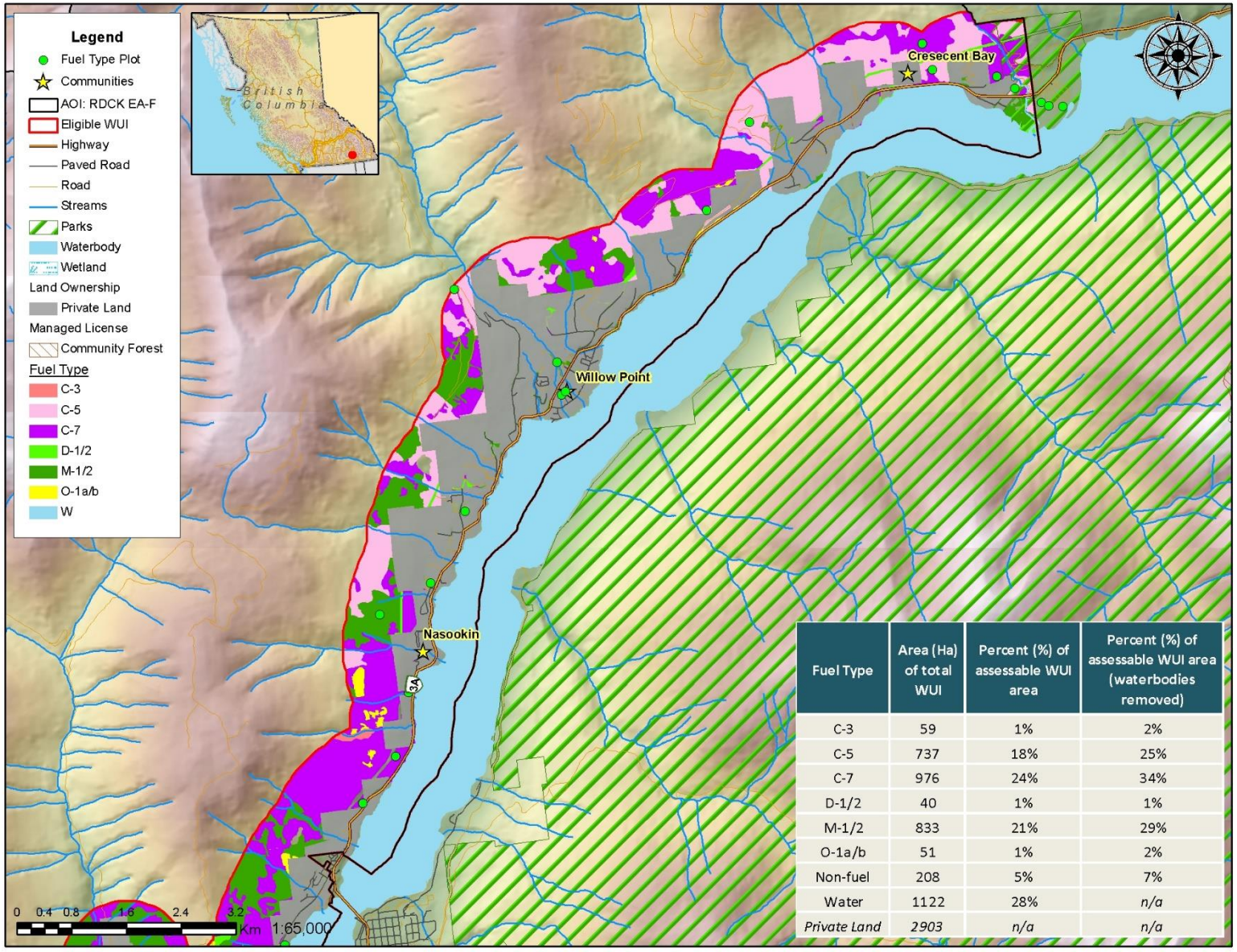
Table 12. Fuel types in EA-F's Wildland Urban Interface

Fuel Type	Fuel Type Description within the WUI	Area (ha) of total WUI	Percent (%) of *assessable* WUI area	Percent (%) of *assessable* WUI area (waterbodies removed)
C-3	Pole-sapling to mature even-aged conifer-dominated forest with moderate to high density and high crown closure (near or at horizontal continuity). Crows separated from the forest floor in mature stands.	59	1%	**2%**
C-5	Low to moderate density, uneven-aged conifer-dominated forest, crown base heights mixed. Understory of discontinuous natural conifer ingress in openings and gaps, deciduous shrubs, and herbs.	737	18%	**25%**
C-7	Low-density, uneven-aged conifer-dominated forest, crowns separated from the ground, understory of discontinuous grasses and shrubs. Exposed bed rock and low surface fuel loading. Often located on south-facing slopes and throughout the ICH. Also used to type completed fuel treatments that have left a low-density conifer stand.	976	24%	**34%**
D-1/2	Deciduous stands/forest. Hazard increases with the amount of deadfall and/or establishment of a flammable shrub layer.	40	1%	**1%**
M-1/2	Moderately well-stocked mixed stands of conifer and deciduous, low to moderate dead stems and down woody fuels. Often transition to become	833	21%	**29%**

[40] Cross-over conditions refer to a point where air temperature drops below the relative humidity (e.g., 20°C/15% humidity), providing conditions for potentially severe fire behaviour.

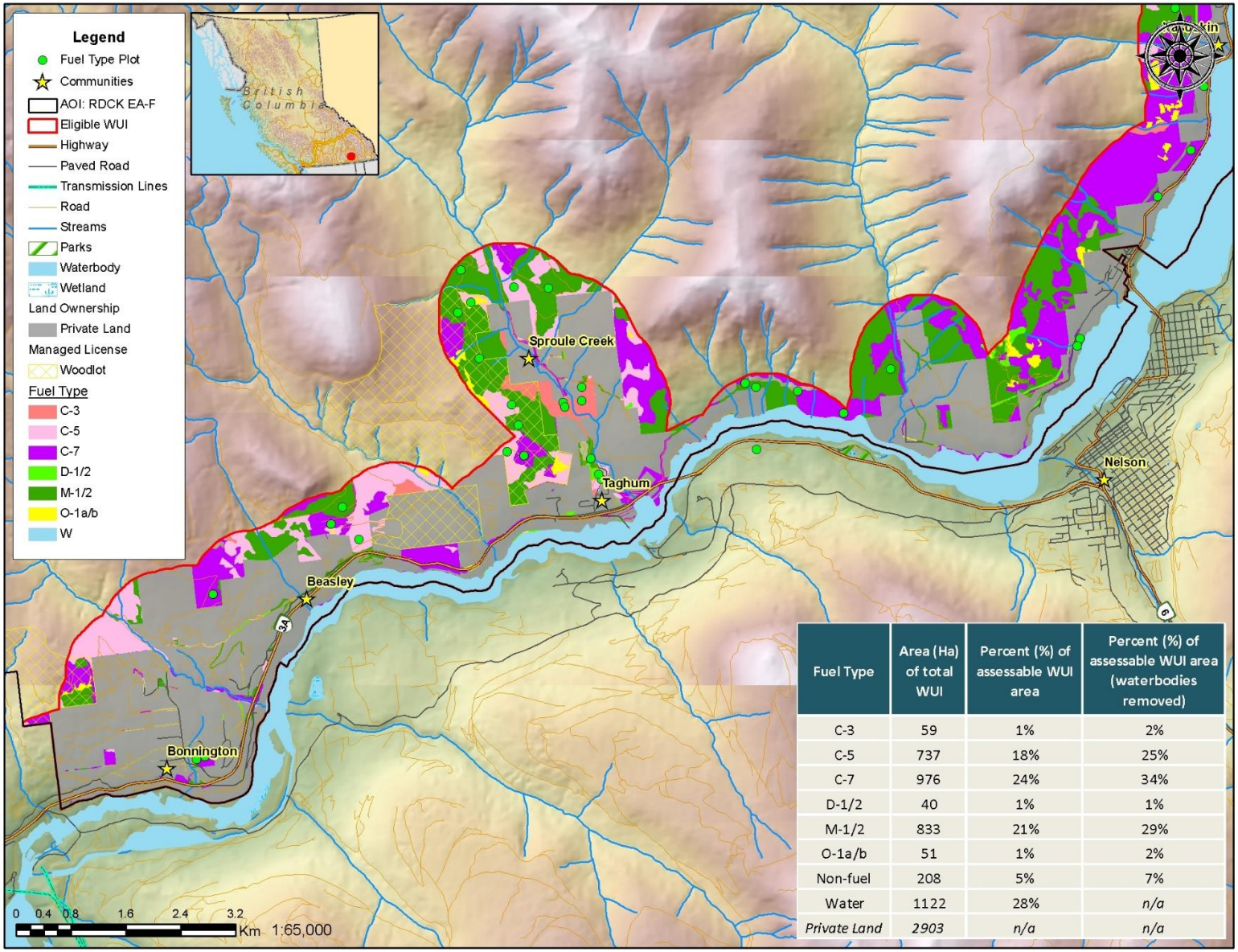
Fuel Type	Fuel Type Description within the WUI	Area (ha) of total WUI	Percent (%) of *assessable* WUI area	Percent (%) of *assessable* WUI area (waterbodies removed)
	more conifer dominated as pioneer deciduous species die out if disturbance is excluded. Note: Western Larch is typed as a deciduous species for fuel typing and may be part or all of the deciduous component in this fuel type.			
O-1a/b	Grassland fuels ('a' refers to matted grasses, 'b' refers to standing). Matted and standing grass that can cure; sparse or scattered shrubs, trees, and down woody debris. Cutblocks >2 seasons old that do not meet S-type descriptions, as well as young regenerating cutblocks that have not reached any horizontal continuity.	51	1%	**2%**
Non-fuel	Areas with no available forest or grass fuels (e.g., roadways, gravel clearings, irrigated and/or mowed fields). These areas may (and often do) contain combustible materials, infrastructure, flammable landscaping, and homes.	208	5%	**7%**
Water	-	1122	28%	***n/a***
Private Land	-	*2903*	*n/a*	***n/a***

Map 9 and Map 10 display the updated fuel types for EA-F's WUI.



Fuel Type	Area (Ha) of total WUI	Percent (%) of assessable WUI area	Percent (%) of assessable WUI area (waterbodies removed)
C-3	59	1%	2%
C-5	737	18%	25%
C-7	976	24%	34%
D-1/2	40	1%	1%
M-1/2	833	21%	29%
O-1a/b	51	1%	2%
Non-fuel	208	5%	7%
Water	1122	28%	*n/a*
Private Land	*2903*	*n/a*	*n/a*

Map 9: Update fuel types for EA-F's eastern WUI.



Fuel Type	Area (Ha) of total WUI	Percent (%) of assessable WUI area	Percent (%) of assessable WUI area (waterbodies removed)
C-3	59	1%	2%
C-5	737	18%	25%
C-7	976	24%	34%
D-1/2	40	1%	1%
M-1/2	833	21%	29%
O-1a/b	51	1%	2%
Non-fuel	208	5%	7%
Water	1122	28%	*n/a*
Private Land	*2903*	*n/a*	*n/a*

Map 10: Update fuel types for EA-F's western WUI.

4.1.3 WEATHER

Fire season conditions are generally warm to hot (July and August daily temperature means average 19.2°C, with average highs of 28.3°C) with some rainfall expected throughout (August averages the least rainfall with 49.4mm, while June averages the most with 71.1mm), with climate change projections trending toward even hotter summers and more pronounced droughts.[41] Local BC Wildfire Service (BCWS) staff working actively on wildfires in the Central Kootenays during 2023 commented that in this region, weather (i.e., relative humidity and wind), slope, and aspect are far more important factors in fire growth than fuel types.[42]

Historical weather data can provide information on the number and distribution of days when EA-F's WUI communities and surrounding areas experience high fire danger conditions. 'High fire danger' is considered with a Canadian Forest Fire Danger Rating System (CFFDRS) Danger Class rating of 4 (High) or 5 (Extreme). Average danger class data for EA-F can be determined from representative BCWS fire weather stations within the WUI. Located across from Blewett on the north side of Kootenay Lake, east of Garrity Creek, the Smallwood BCWS fire weather station (997m elevation; Nelson is at 535m elevation); is the most representative for EA-F's WUI. Averages for the past 12 years are presented in Figure 10 below.

Data from the Smallwood fire weather station shows that July and August have the greatest number of High and Extreme fire danger days, with July averaging 8 and August averaging 15. When combined, 38% of days in those two months exhibit High or Extreme fire danger. It is important to note that High fire danger days are present in both June and September within EA-F's WUI.

Overall, it is most likely that fire weather and associated fire danger days blends across EA-F's WUI east to west, from averaging a higher number of High and Extreme fire danger days in its more eastern areas, to a lower number of fire danger days in its western areas. However, the data does show that EA-F's WUI is at risk due to fire season weather.

[41] Environment and Climate Change Canada data for Nelson.
[42] From verbal conversations between the Plan's developers and wildfire crews encountered during field work for the Plan's development.

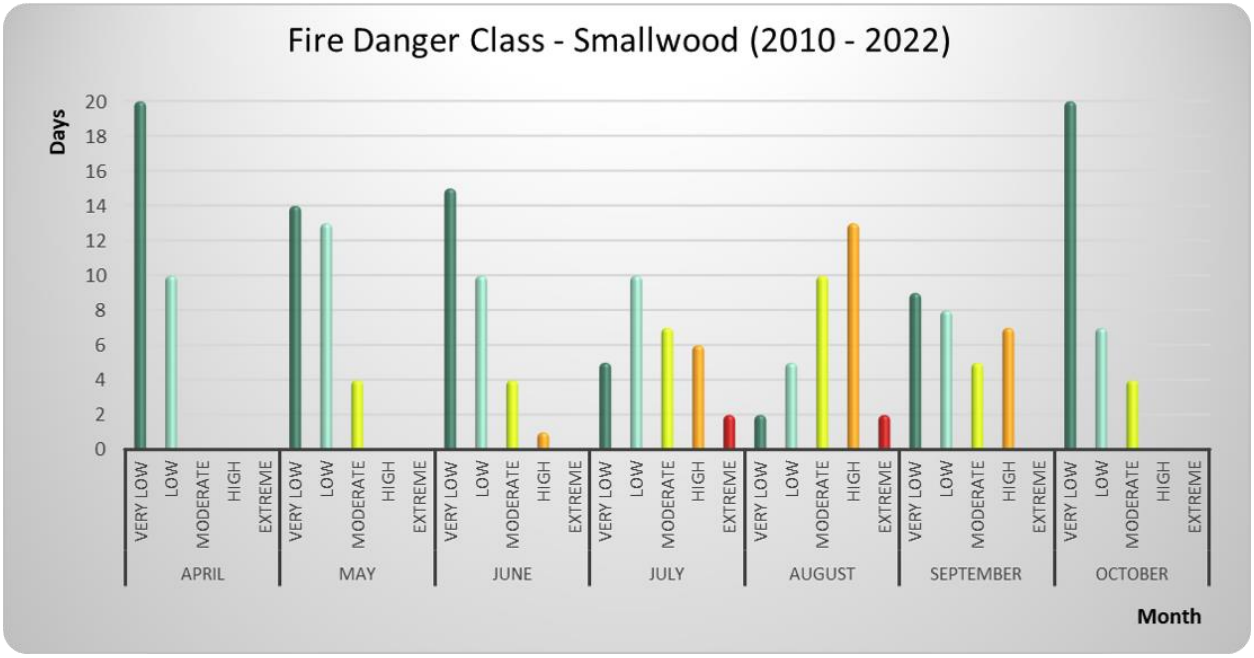


Figure 10: Average number of fire danger rating days by month for the Smallwood fire weather station.

Hourly wind speed and direction is also recorded at BCWS weather stations. Data is publicly available in the form of average Initial Spread Index (ISI) roses.[43] The ISI is a numeric rating of the expected rate of fire spread that combines the effects of wind speed and fine fuel moisture (which is controlled by temperature and relative humidity). ISI roses can be used to help plan the location of fuel treatments on the landscape to protect values at risk based on the predominant wind direction and frequency of higher ISI values. Wildfire that occurs upwind of a value poses a more significant threat to that value than one which occurs downwind.

Wind and ISI data assessed from the Smallwood fire weather station (Figure 10) during the fire season indicates that EA-F communities primarily experience strong diurnal winds – up-valley (north and east along Kootenay River and the west arm of Kootenay Lake during the day, and down-valley (south and west along the west arm of Kootenay Lake and Kootenay River) at night . As per the ISI roses, the highest ISI values (and thus associated with higher rates of fire spread) are during the highest temperature summer months, June - August.

The local BCWS Wildfire Prevention Officer noted that high elevation spruce/balsam stands [largely just uphill and outside EA-Fs WUI] tend to exhibit the most aggressive and volatile growth in the region. Middle elevation mixed stands of Douglas-fir, larch, and pine species [largely within the upper slopes of EA-F's WUI] can be volatile as well, however, typically less so than the higher spruce/balsam stands. Low elevation western red cedar/western hemlock stands [largely within the lower slopes of EA-F's WUI] exhibit the least volatility, unless certain fuel and weather conditions are met. Importantly, as fuel

[43] https://www2.gov.bc.ca/gov/content/safety/wildfire-status/prevention/vegetation-and-fuel-management/fire-fuel-management/fuel-management

conditions dry out in the summer and combine with specific weather events (wind, low humidity, hotter temperatures), these fuel types can react with intensity and exhibit aggressive fire behavior. Echoing the sentiments of the firefighting ground crews encountered during Plan development field assessment work, winds are required to create volatility and fire growth in the fuel types in EA-F and are also required to push fire aggressively downslope towards communities.

Figure 11. Daily and monthly average initial spread index rose for Smallwood fire weather station for the fire season (April – October)

4.2 WILDFIRE HISTORY

4.2.1 HISTORIC FIRE REGIME

EA-F's WUI can be categorized using the Biogeoclimatic Ecosystem Classification (BEC) system, which classifies the province into zones by vegetation, soils, and climate. Regional subzones are derived from relative precipitation and temperature.

Map 11 and Map 12, in Section 4.2.2 below, show the distribution of Biogeoclimatic zones and associated Natural Disturbance Types (NDTs) in EA-F's WUI. Summarized in Table 13, the middle slopes of EA-F's WUI are dominated by the Interior Cedar Hemlock, Dry Warm (ICHdw1) subzone with an associated NDT3 – ecosystems with frequent stand-initiating events.[44] These ecosystems are characterized by frequent wildfires that range from small spot fires to conflagrations covering tens of thousands of hectares.[44] This results in a landscape mosaic of stands of different ages with individual stands being even-aged.[44] Larger fires often occurred, and could grow to enormous sizes if no topographical-limiting features were present. The mean return interval for fire in the ICH NDT3 is approximately 150 years.[44]

The lower slopes of EA-F's WUI are dominated by the Interior Cedar Hemlock, Very Dry Warm (West Kootenay Variant) subzone with an associated NDT4 – ecosystems with frequent stand-maintaining fires. These frequent fires would maintain the existing forest stand structure through frequent, low-intensity fires that would normally regulate the amount of surface fuel build-up and reduce the number of small, sapling size regenerating trees.[44] A higher frequency and a variable intensity of these types of fires across the landscape would create mosaics of uneven-aged forests and grassy or shrubby openings which naturally restricted the spread of large, severe fires.[44] Larger stand-initiating crown fires may be rarer, but historically occurred at intervals ranging from at least 150 to 250 years.[44]

It is important to consider that fire regimes in the region were likely exemplified through pre-settlement cultural burning practices by First Nations. It is also important to consider that, in the future, BEC (and associated NDT) distributions will likely shift and/or change because of climate change.

Table 13. Natural Disturbance Types (NDTs) of EA-F's WUI.

Biogeoclimatic Zone	Natural Disturbance Type	Area (ha)	Percent (%)
ICHdw1: Interior Cedar - Hemlock; Dry Warm; West Kootenay Variant	NDT3	3,537	**51%**
ICHxw: Interior Cedar - Hemlock; Very Dry Warm	NDT4	3,391	**49%**
ICHmw2: Interior Cedar - Hemlock; Moist Warm; Slocan Variant	NDT2	34	**<1%**

[44] BC Biodiversity Guidebook. https://www.for.gov.bc.ca/hfd/library/documents/bib19715.pdf

4.2.2 HISTORICAL WILDFIRE OCCURENCES

Historic wildfire perimeters, from 1912-2022, are displayed below on Map 11 and Map 12 for an area within five kilometres of EA-F's WUI. Overall, wildfires have occurred regularly since 1912, with both people and lightning being nearly equal causes of those fires' ignitions (people: 54%, 34/63; lightning: 46%, 29/63). Since 2000, there have been 13 fires recorded, of which 8 (62%) were caused by lightning, with none entering EA-F's WUI, but two coming to edge near Willow Point and Crescent Bay. The largest fires recorded, all over 1,000 ha, occurred in 1933-34, and the two largest since 2000 were both approximately 775 ha. For all historic fires within five kilometres of EA-F communities' WUIs, the average size was 354 ha.

BCWS fire ignition data (which records point ignitions that may or may not have developed into a wildfire with a recorded perimeter area) is only available from 1950 onwards. Looking at the same five-kilometre area surrounding EA-F's WUI, 668 out of 915 (73%) recorded ignitions have been from people. 258 (39%) were recorded from 2000 onwards. This data, and the fire perimeter data above, both show that humans are historically the leading cause of fire ignition in EA-F's WUI. The frequency of human ignitions has greatly increased in the last 23 years, but the leading recent cause of developed fires is from lighting.

Although human ignitions are the dominant source for point ignitions historically, lightning is still a very real ignition threat, and is the leading cause of ignition in higher elevations on slopes and ridges within 5km of EA-F's WUI. Overall, under the right fire weather conditions, fires started from any ignition source in the wildland can grow in size and threaten the WUI.

Figure 12 displays trends with fire ignitions since the 1950's *within EA-F's WUI*. It is not surprising that, due to the much greater presence of people within the WUI than outside of it, humans are the leading cause of ignitions. Mirroring the larger five-kilometre area surrounding, human ignitions have been increasing since 2000.

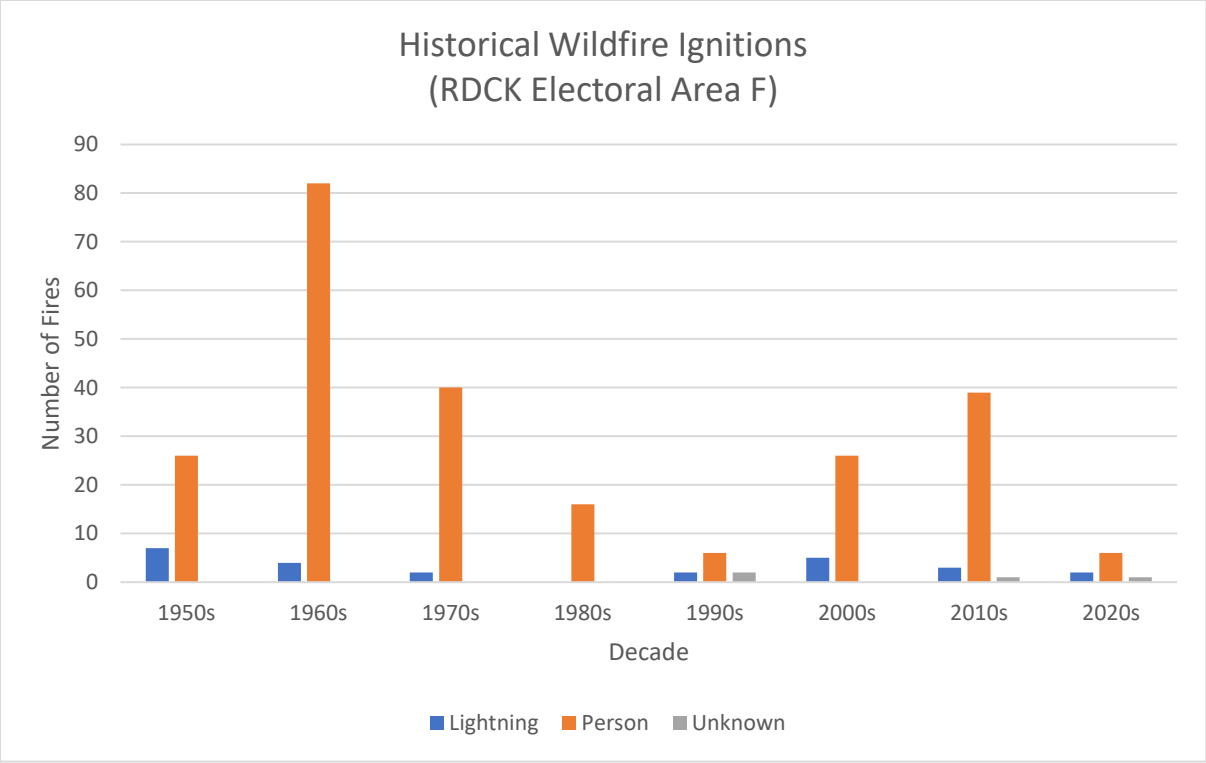
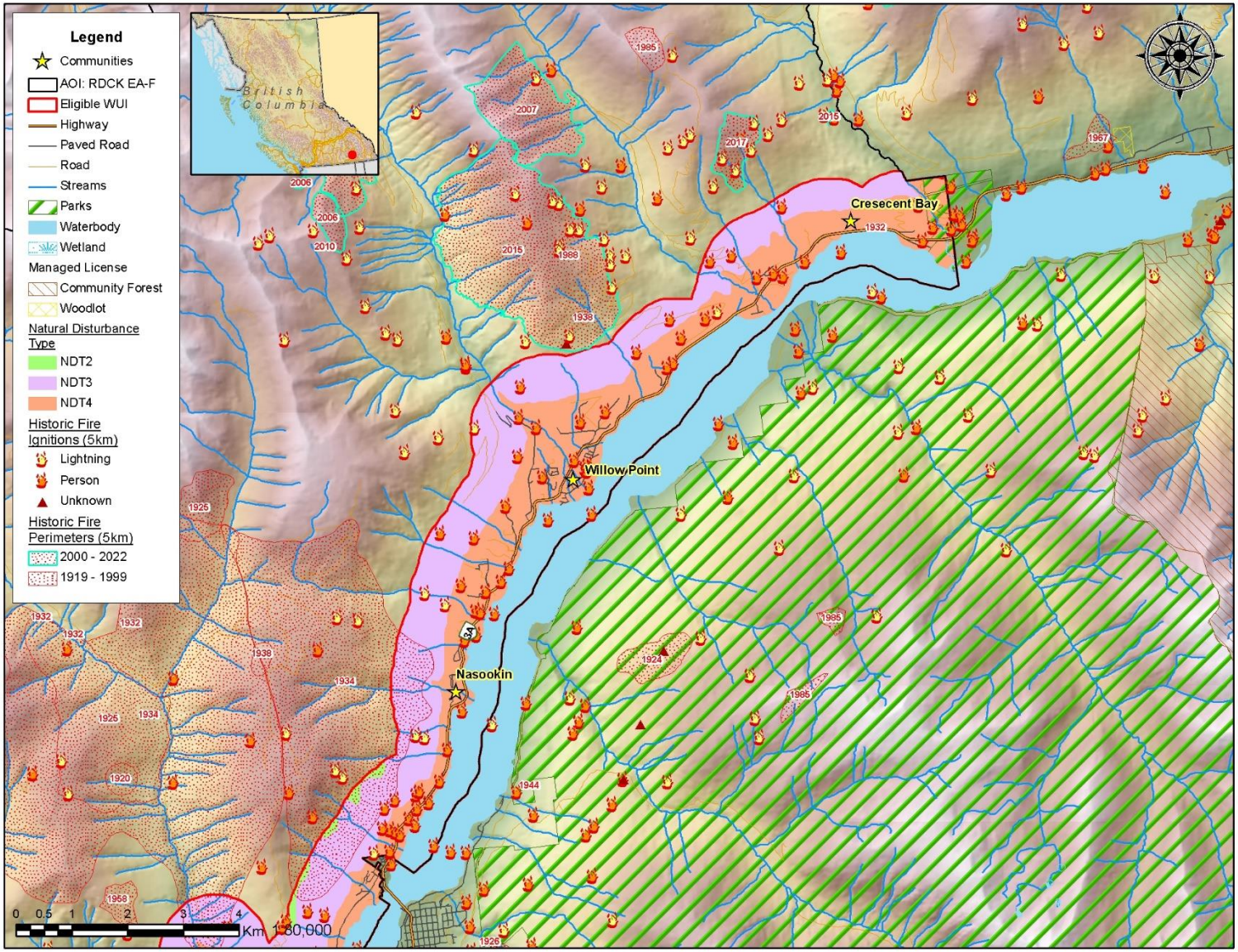
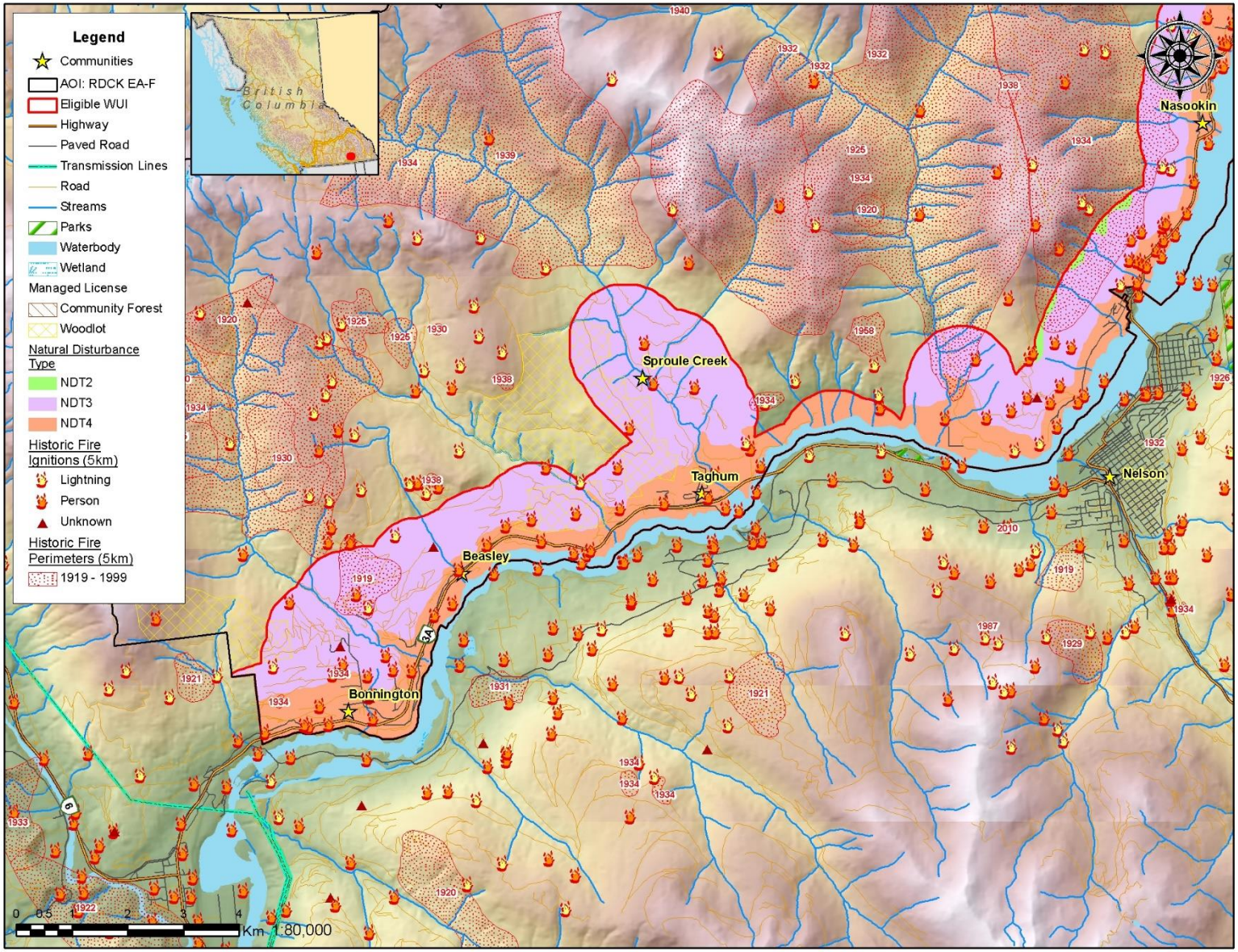


Figure 12: Summary of fire ignition data by cause within RDCK EA-F's WUI (Data from the BC Wildfire Service).



Map 11: Natural disturbance regimes and historical fire ignitions and occurrences within 5 km of EA-F's WUI (east).



Map 12: Natural disturbance regimes and historical fire ignitions and occurrences within 5 km of EA-F's WUI (west).

4.2.3 WILDFIRE RESPONSE

Fire response data[45] was provided by the Beasley VFD for its response area fire-specific callouts over the last 10 years, and is shown in Table 14. The VFD responded to an average of 4.5 fire calls per year between 2013 and 2022, of which 56% were non-structural fires (identified as 'wildland' callouts). The data shows callouts for both structure and wildland fires fluctuate between years, with no discernable trend. Beasley VFD noted that wildland fire callouts for 2023 were lower than previous years. With 56% of average fire callouts per year being for wildland incidents, this response data demonstrates the importance of wildfire specific training and equipment and public fire education – wildfires can just as easily begin from a house fire igniting the adjacent forest and wildland fuels.

Table 14: Beasley Volunteer Fire Department fire callout record 2013-2022.

Year	Wildland Fire Callout	Structure Fire Callout	Total Fire Callouts	*% Wildland Callout*
2013	1	2	3	*33%*
2014	2	2	4	*50%*
2015	8	1	9	*89%*
2016	1	1	2	*50%*
2017	2	3	5	*40%*
2018	3	0	3	*100%*
2019	3	2	5	*60%*
2020	1	3	4	*25%*
2021	4	1	5	*80%*
2022	0	5	5	*0%*
average/year	***2.5***	***2***	***4.5***	***56%***

4.3 LOCAL WILDFIRE RISK ASSESSMENT

There are two main components of this local risk assessment: the *wildfire behaviour threat class* (fuels, weather, and topography sub-components) and the *WUI risk class* (structural sub-component). The local wildfire threat assessment process includes several key steps as outlined in Appendix B: Local Wildfire Risk Process and summarized as follows:

- *Fuel type attribute assessment* – ground truthing/verification and updating as required to develop a local fuel type map (Appendix B-1: Fuel Typing Methodology).
- *Consideration of the proximity of fuel to the community* – recognizing that fuel closest to the community usually represents the highest hazard (Appendix B-4: Proximity of Fuel to the Community).
- *Analysis of predominant summer fire spread patterns* – using wind speed and wind direction during the peak burning period using ISI Rose(s) from BCWS weather station(s). Wind speed, wind direction, and fine fuel moisture condition influence wildfire trajectory and rate of spread.

[45] Data provided to B.A. Blackwell & Associates from Fire Departments via information gathering questionnaire.

- *Consideration of topography in relation to values* (Table 10 and Table 11) – slope percentage and slope position of the value are considered, where slope percentage influences the fire's trajectory and rate of spread and slope position relates to the ability of a fire to gain momentum uphill.
- *Stratification of the WUI* – according to relative wildfire threat based on the above considerations, other local factors, and field assessment of priority wildfire risk areas.

Wildfire threat assessment field work in EA-F's WUI was completed in August of 2023. Nearly 80 field stops (e.g., qualitative FireSmart notes, fuel type updates/verification, photograph documentation) were made across the WUI (see Appendix B-2: ; Map 13 and Map 14), including 12 Wildfire Threat Assessment (WTA) threat plots (see Appendix C: Wildfire Risk Assessment – Worksheets and Photos). WTA plots were completed in interface (i.e., abrupt change from forest to residential development) and intermix (i.e., where forest and structures are intermingled) areas of the WUI to support wildfire risk analyses and development of priority treatment areas, as well as in completed fuel treatment areas to quantify the reduction in site-level wildfire threat. Constraints such as the limited amount of public land within some parts of the WUI available for assessment, and/or limited accessibility into the WUI (e.g., access required through private property; no roads), limited field assessments for some areas.

It is important to note that the local WTA analysis does not apply to private land parcels nor any areas outside of the eligible WUI for this CWRP. As well, the threat assessments quantify threat as it relates to forest fuels, but do not include the ignition potential of residential landscaping, structures, or other infrastructure. Structure fires and structure-to-structure spread in a wildfire scenario are largely attributable to hazardous conditions in the FireSmart Home Ignition Zone of a structure (i.e., the area within 30m of the principal building and/or its attachments).

4.3.1 WILDFIRE THREAT CLASS ANALYSIS

Classes of the wildfire threat class analysis are as follows:

- Very Low: Waterbodies with no forest or grassland fuels, posing no wildfire threat;
- Low: Developed and undeveloped land that will not support significant wildfire spread;
- Moderate: Developed and undeveloped land that will support surface fires that can be both threatening and unthreatening to homes and structures;
- High: Landscapes or stands with continuous forested or grassland fuels that will support candling, intermittent crown fires, or continuous crown fires. These landscapes often contain steeper slopes, rough or broken terrain and/or south or west aspects. High polygons may include high indices of dead and downed conifers; and
- Extreme: Continuous forested land that will support intermittent or continuous crown fires.

The results of the wildfire threat class analysis are displayed on Map 13 and Map 14, and summarized in Table 15 below. The local threat analysis shows that, for the assessable area (i.e., not private land and removing foreshore water areas), 62% of EA-F's eligible WUI is classified as a high or extreme fire behavior threat, which largely reflects it being dominated by steeper middle and upper slopes on southerly aspects with conifer-dominated fuel types. Only 8% of the assessable WUI is classified as a low threat – almost all

located in moisture receiving lower slopes (due to deciduous-dominated fuel types and low slope grades, or in areas of recently completed fuel treatments. Overall, private land totals 42% of EA-F's WUI – this area was not allocated fire threat data. Conditions on private land can often result in the fire hazard being much higher than in the forest adjacent if there is low compliance with FireSmart vegetation and structure principles – issues that were frequently observed throughout EA-F during field work.

Table 15: Wildfire threat summary for EA-F's eligible WUI

Wildfire Threat			
Threat Class	**Hectares**	**% of WUI**	**% of Assessable Public Land (excluding water)**
Extreme	499	7%	**17%**
High	1308	19%	**45%**
Moderate	864	12%	**30%**
Low	231	3%	**8%**
Very Low/No Threat (Water)	*1122*	*16%*	-
No Data (Private Land)	*2903*	*42%*	-

4.3.2 WUI RISK CLASS ANALYSIS

WUI risk classes are quantified when the Wildfire Threat (the above) is assessed as high or extreme, potentially causing unacceptable wildfire risk when near communities and developments. WUI risk classes are described below:

- **Low**: The high or extreme threat is sufficiently distant from developments, having no direct impact of the community and is located over 2 km from structures;
- **Moderate**: The high or extreme threat is sufficiently distant from developments, having no direct impact of the community and is located 500m to 2 km distance from structures;
- **High**: The high or extreme threat has potential to directly impact a community or development and is located 200m to 500m from structures; and
- **Extreme**: The high or extreme threat has potential to directly impact a community or development and is located within 200m from structures.

Table 16 below (and displayed on Map 13 and Map 14) summarizes the risk class ratings within EA-F's WUI. Of the 1,807 hectares assigned a High or Extreme wildfire threat class, 891 hectares (49%) have a high or extreme WUI risk. Overall, this represents 30% of the assessable land within EA-F's WUI. This analysis provides an initial step towards identifying priority areas/neighbourhoods for directing FireSmart education and vegetative/fuel management efforts, if practicable.

It is important to note that reducing the risk (i.e., performing wildland fuel management) in any of the High to Extreme WUI risk areas is unlikely to be a silver bullet in protecting communities and structures. In extreme wildfire scenarios, firebrands (embers) can travel many kilometers ahead of the active fire front, land in densities of up to 600/m^2, and ignite combustible building materials and landscaping

vegetation. In combination with wildland fuel management, increasing the resilience of EA-F's WUI communities and interface/intermix neighbourhoods can only be efficiently achieved by performing residential-scale FireSmart activities on private land. The proposed fuel treatment units identified in Section 5.7 are not a comprehensive list of all areas that qualify for management; they were selected as the highest priority areas that are practicable to implement, present a high risk to their respective communities, and meet required funding program goals and requirements as either fuel breaks or fuel treatment areas.

Table 16: WUI risk class ratings within EA-F's eligible WUI.

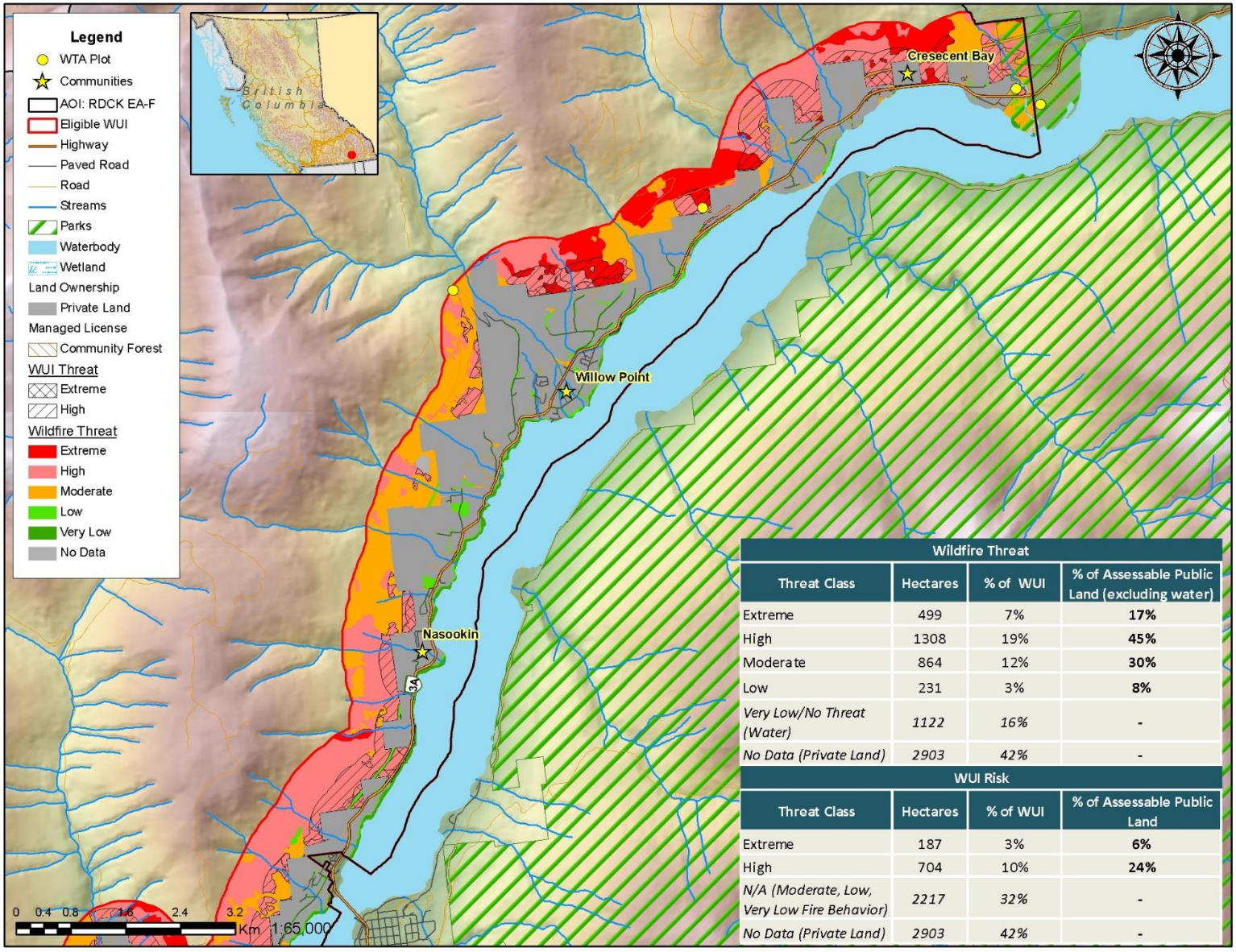
WUI Risk			
Risk Class	**Hectares**	**% of WUI**	**% of Assessable Public Land**
Extreme	187	3%	**6%**
High	704	10%	**24%**
N/A (Moderate, Low, or Very Low fire threat)	*2217*	*32%*	-
No Data (Private Land)	*2903*	*42%*	-

For detailed field data collection and spatial analysis methodology for the local threat assessment and classification, see Appendix B.

The Province of BC produces a Provincial Strategic Threat Analysis (PSTA; updated in 2021) for all non-private land parcels in BC. This high-level assessment of relative wildfire threat throughout the province is largely based on data from the Vegetation Resource Inventory (VRI) that has not been ground truthed, fire occurrence patterns, potential fire intensity, and spotting potential.[46] The PSTA ranks threat on a scale of 1 (lowest) through 10 (extreme). Complementing the above local wildfire risk analyses, the PSTA is a high-level, geographic information system (GIS) raster analysis that is suitable for wildfire threat information across the land base, while appropriate land management activities need to be determined at the local level using site-specific stand-level information.

Additionally, the Province has developed a WUI Risk Class Framework to prioritize risk reduction initiatives, categorizing WUI polygons by a risk class of 1 (highest) through 5 (lowest). The application of relative risk does not imply "no risk" since the goal is to identify areas where there is higher risk. EA-F's WUI is categorized as being in a Risk Class of 1 – highest relative risk.

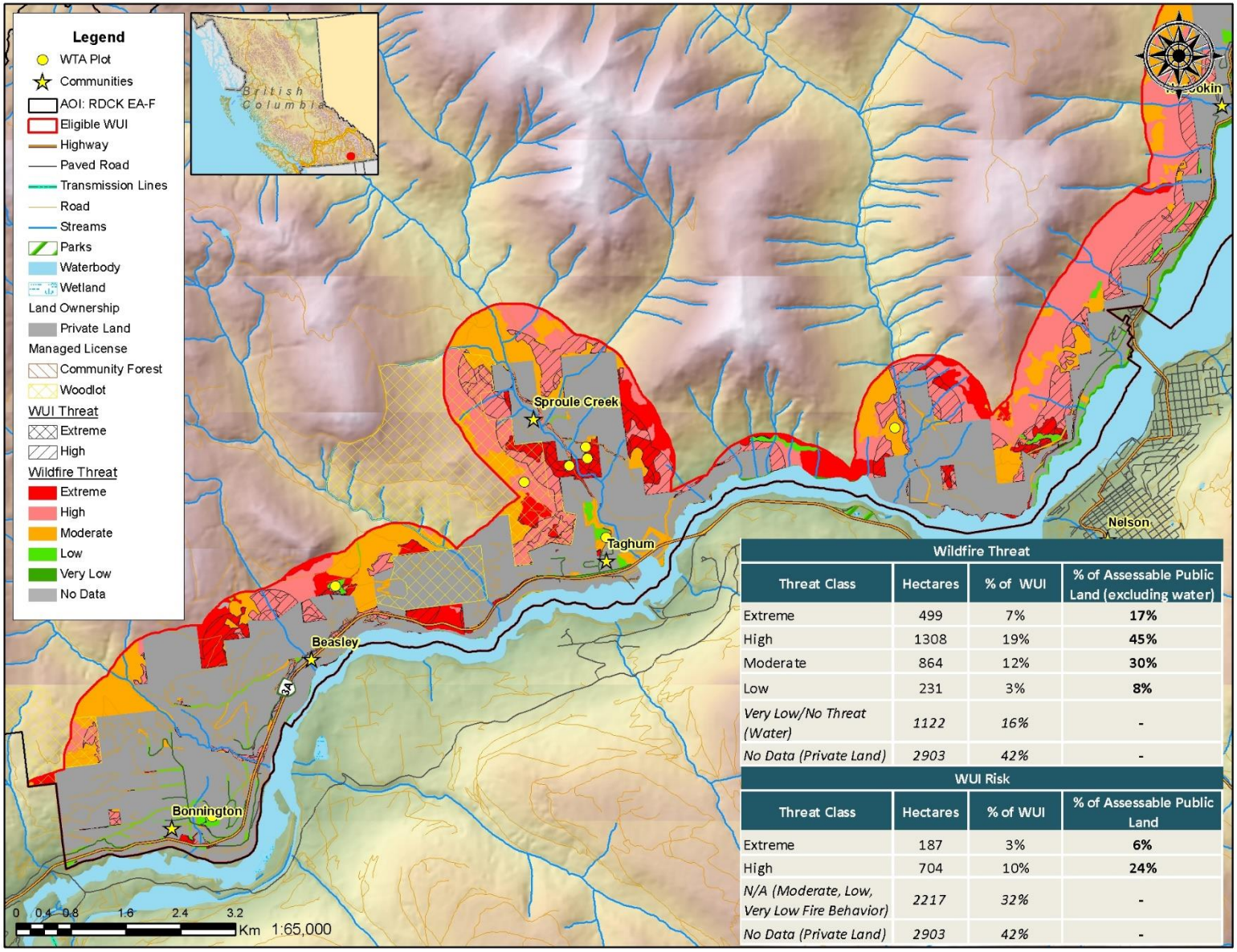
[46] MFLNRORD. (2017). Provincial Strategic Threat Analysis. Accessed from: https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/wildfire-status/prevention/fire-fuel-management/fuels-management/provincial_strategic_threat_analysis_2017_update.pdf



Wildfire Threat			
Threat Class	Hectares	% of WUI	% of Assessable Public Land (excluding water)
Extreme	499	7%	**17%**
High	1308	19%	**45%**
Moderate	864	12%	**30%**
Low	231	3%	**8%**
Very Low/No Threat (Water)	*1122*	*16%*	-
No Data (Private Land)	*2903*	*42%*	-

WUI Risk			
Threat Class	Hectares	% of WUI	% of Assessable Public Land
Extreme	187	3%	**6%**
High	704	10%	**24%**
N/A (Moderate, Low, Very Low Fire Behavior)	*2217*	*32%*	-
No Data (Private Land)	*2903*	*42%*	-

Map 13: Local wildfire threat assessment for EA-F's eastern WUI.



Wildfire Threat			
Threat Class	Hectares	% of WUI	% of Assessable Public Land (excluding water)
Extreme	499	7%	**17%**
High	1308	19%	**45%**
Moderate	864	12%	**30%**
Low	231	3%	**8%**
Very Low/No Threat (Water)	*1122*	*16%*	-
No Data (Private Land)	*2903*	*42%*	-

WUI Risk			
Threat Class	Hectares	% of WUI	% of Assessable Public Land
Extreme	187	3%	**6%**
High	704	10%	**24%**
N/A (Moderate, Low, Very Low Fire Behavior)	*2217*	*32%*	-
No Data (Private Land)	*2903*	*42%*	-

Map 14: Local wildfire threat assessment for EA-F's western WUI.

4.4 HAZARD, RISK, AND VULNERABILITY ASSESSMENT

The purpose of a Hazard, Risk and Vulnerability Assessment (HRVA) is to help a community make risk-based choices to address vulnerabilities, mitigate hazards, and prepare for responding to and recovering from hazard events. The HRVA process assesses sources of potential harm, their likelihood of occurring, the severity of their possible impacts, and who or what is particularly exposed or vulnerable to these impacts.[47] An HRVA was not noted for EA-F, however, the Emergency Response and Recovery Plan for the Regional District of Central Kootenay includes a section on interface wildfire planning (3.10) with listed potential impacts. When an HRVA is completed or updated for EA-F (or RDCK as a whole), RDCK should look to the most recent CWRPs and reference their completed wildfire threat class analyses as well as recommendations.

[47] Government of BC. HRVA Example Report. https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/emergency-preparedness-response-recovery/local-government/hrva/hrva_forms-step_8-anytown_bc-sample_hrva_report.pdf

SECTION 5: FIRESMART PRINCIPLES

FireSmart™ is the leading program in Canada aimed at empowering the public and increasing neighbourhood resilience through wildfire mitigation measures. It has been formally adopted by almost all Canadian provinces and territories, including British Columbia in 2000. The FireSmart program covers a wide breadth of preventative measures, which are founded in the seven FireSmart disciplines: Education, Legislation and Planning, Development Considerations, Interagency Cooperation, Cross-Training, and Vegetation Management. These seven disciplines and the guiding principles behind FireSmart can be applied at a number of spatial scales, and are not restricted to any type of land ownership, forest type or property type. RDCK and EA-F has an active FireSmart program that is well staffed and funded to complete residential education activities.

Since EA-F's 2016 CWPP was completed, 9 of 37 of its recommendations have been wholly or partially implemented (previously detailed and discussed in Section 2.1). The recommendations addressed primarily related to delivering public FireSmart and wildfire education and prescribing and implementing proposed treatment units.

It has been found that during extreme wildfire events, most home destruction has been a result of low-intensity surface fire flame exposures, usually ignited by embers (firebrands). Firebrands can be transported long distances ahead of the wildfire, across fire guards and fuel breaks, and accumulate in densities that can exceed 600 embers per square meter. Combustible materials found on the exterior of and surrounding homes (the FireSmart Home Ignition Zone) combine to provide fire pathways allowing spot surface fires ignited by embers to spread and carry flames or smoldering fire into contact with structures.

Because ignitability of structures and landscaping vegetation is the main factor driving structure loss, the intensity and rate of spread of wildland fires beyond the community has not been found to necessarily correspond to loss potential. For example, FireSmart homes with low ignitability may survive high-intensity fires, whereas highly ignitable homes may be destroyed during lower intensity surface fire events.[48] Increasing ignition resistance would reduce the number of homes simultaneously on fire; extreme wildfire conditions do not necessarily result in WUI fire disasters.[49] Initial assessments of homes/structures damaged versus those not from the recent 2023 Kelowna-area wildfires provides strong evidence supporting these key points.[50] It is for this reason that the key to reducing WUI fire structure loss is to reduce structure ignitability. Mitigation responsibility must be centered on structure owners. Risk communication, education on the range of available activities, and prioritization of activities should help homeowners to feel empowered to complete simple risk reduction activities on their property.

[48] Cohen, J. Preventing Disaster Home Ignitability in the Wildland-urban Interface. Journal of Forestry. p 15 - 21.
[49] Calkin, D., J. Cohen, M. Finney, M. Thompson. 2014. *How risk management can prevent future wildfire disasters in the wildland-urban interface*. Proc Natl Acad Sci U.S.A. Jan 14; 111(2): 746-751. Accessed online 1 June, 2016 at http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3896199/.
[50] Presentation by BCWS to the Wildland Fire and Fuels Community of Practice group via Forest Professionals of BC Webinar, November 2023.

5.1 COMMUNITY OVERVIEW

During CWRP development, FireSmart risk and resiliency factors for different general areas or specific neighbourhoods throughout EA-F were noted (Table 17). This incorporates field observations, the local risk assessment, and information from local government meetings and consultation.

Table 17: FireSmart vulnerability and resilience by neighbourhood.

Community	Vulnerability	Resilience
Crescent Beach	- Forest interface and intermix. - Upslope of Highway ignition source. - Steep slopes within the community. - No hydrants.	- Serviced by Balfour Harrop VFD. - Proximity to Kootenay Lake water source.
Heddle Six Mile Duhamel Willow Point	- Forest interface and intermix. - Some homes are not FireSmart (deteriorating fences, sheds, exterior materials, landscaping vegetation). - Upslope of Highway ignition source. - Prone to flooding and mudslides.	- Serviced by North Shore VFD. - Proximity to Kootenay Lake water source. - Hydrants/standpipes throughout community.
Nasookin 4 Mile Ridgewood	- Forest interface and intermix. - Some homes are not FireSmart (deteriorating fences, sheds, exterior materials, landscaping vegetation). - No hydrants. - Upslope of Highway ignition source.	- Serviced by North Shore VFD.
Johnstone Road	- Forest interface and intermix. - Some homes are not FireSmart (deteriorating fences, sheds, exterior materials, landscaping vegetation). - No hydrants. - Adjacent to highway ignition source.	- Serviced by North Shore VFD. - Fuel treatments recently completed in the interface.
Grohman	- Forest interface and intermix. - Some homes are not FireSmart (deteriorating fences, sheds, exterior materials, landscaping vegetation). - Indirect access routes from Nelson and Highways make some properties more isolated. - No hydrants.	- Serviced by Beasley VFD. - Proximity to Nelson. - Proximity to Kootenay River water source and local streams.
Taghum Sproule Creek	- Forest interface and intermix. - Some homes are not FireSmart (deteriorating fences, sheds, exterior materials, landscaping vegetation). - Divisive history of land use / land management in community. - Sproule Creek one road in/out community. - No hydrants in Sproule Creek.	- Serviced by Beasley VFD. - Natural water source (Kootenay River). - A few hydrants/standpipes in Taghum (but limited capacity).
Beasley	- Forest interface and intermix.	- Serviced by Beasley VFD in the immediate vicinity.

Community	Vulnerability	Resilience
	- Some homes are not FireSmart (deteriorating fences, sheds, exterior materials, landscaping vegetation). - Upslope of Highway ignition source. - Steep slopes within the community. - No hydrants.	- Logging by BCTS may provide fuel breaks above some sections of the community. - Some completed fuel treatments in the interface.
Bonnington	- Forest interface and intermix. - Some homes are not FireSmart (deteriorating fences, sheds, exterior materials, landscaping vegetation). - Upslope of Highway ignition source.	- Serviced by Beasley VFD - Fire hydrants (privately managed). - Some completed fuel treatments in the interface.

The sections to follow provide information on each FireSmart discipline as it relates to EA-F. An analysis of actions that have been implemented are noted, as well as any relevant gaps identified. Each section contains a table of recommended actions for EA-F. Most actions are fundable through the CRI FireSmart Community Funding and Supports program. Each recommendation includes a rationale, lead agency, timeline, and estimated resources to complete.

5.2 EDUCATION

Rural areas without fire services, or dependent upon small volunteer fire services, rely heavily on the coordination of local resources and the uptake of FireSmart initiatives to be prepared for a wildfire event. Public education and outreach play a critical role in helping a community prepare for and prevent a wildfire emergency. Awareness of wildfire risk is important, but this needs to be paired with an awareness of potential mitigation actions and available FireSmart programs for residents to implement on their properties and within the community. Participating in wildfire risk reduction and resiliency activities can also promote a sense of empowerment and shared responsibility at the home, street, and community level. The education discipline often supports the successful implementation of many other FireSmart disciplines by building awareness and understanding within both residents and visitors.

EA-F (via the RDCK FireSmart program and its own FireSmart Coordinator/Mitigation Specialist) has been actively engaging the community with a FireSmart education program. This has led to EA-F having one of the highest rates of FireSmart assessed homes in the RDCK.[51] Other FireSmart education activities that have been completed or are ongoing include:

- Distribution of FireSmart educational materials to residents,
- School FireSmart information days,
- Social media updates with FireSmart information and fire danger ratings,[52]

[51] Information from EA-F local government questionnaire. 200 Home Partners Program assessments have been completed in EA-F at the time of this report's writing.
[52] Including updates by the Beasley VFD to their Facebook page.

- Community FireSmart workshops and presentations,[53] and
- Created FireSmart signage at completed community fuel treatments.

There are currently seven FireSmart Coordinators across multiple RDCK electoral areas. As these positions were all recently created, there could be many initial lessons learned that could be shared between them. RDCK FireSmart coordinators should look to plan regular meetings amongst themselves to share these lessons, as well as success and failures so that the region, as a whole, is working together towards a more wildfire resilient future. Additionally, as FireSmart Neighbourhood Champions (as part of the FireSmart Canada Neighbourhood Recognition Program – see Section 5.7) are identified, consider including them in these meetings so that FireSmart information and programming opportunities are taken back into each community.

To continue furthering FireSmart education initiatives, Table 18 below details recommended actions that RDCK and EA-F can pursue or continue. Because of the large amount of private property within EA-F's WUI, the observed general lack of adherence to FireSmart construction materials and landscaping, and the understanding that homes, landscaping vegetation, and all other manner of flammable and combustible materials are considered fuel in the WUI wildfire triangle, a large emphasis should be placed by EA-F to continue upon its FireSmart education successes, and to seek out new opportunities to engage with neighbourhoods or demographics not previously done or that have been difficult to so with to date. Not all activities/efforts will be successfully received by the public, but it is equally important to know what does not work as what does in getting the FireSmart message further into the community – then efforts can be refined and improved moving forwards. This includes tourists, of which there are many to EA-F's communities, recreation areas, and campsites, that may not be knowledgeable on FireSmart and the wildfire risks their actions may carry.

[53] Including Beasley VFD attending a FireSmart community presentation at the Taghum Hall in summer 2023.

Table 18: Education recommendation and action items

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
Education - Section 5.2							
Residents							
1	High	Continue to apply for funding and employ an EA-F FireSmart Coordinator/Mitigation Specialist.	To provide a continuous, local FireSmart program, delivered by local professionals with local knowledge and connections, to their community. Having a FireSmart Coordinator will provide a lead person with dedicated time to coordinate, manage, and implement the program, especially as it grows.	RDCK	2 years	EA-F has its own FireSmart program being managed by a local FireSmart Coordinator.	CRI FCFS up to cost maximums.
2	High	RDCK FireSmart Coordinators should plan regular meetings to discuss their successes, failures, and learnings. Consider adding, or having specific meetings with, FireSmart Community Neighbourhood Champions.	So that they can continue to improve the RDCK's FireSmart program and tailor it to their respective communities. Adding in Community Champions will allow them to further support their EA's communities, as well as get FireSmart messaging and opportunities back into the communities faster.	FireSmart Coordinators (RDCK)	ASAP and ongoing	RDCK FireSmart Coordinators are meeting more than once a year.	CRI FCFS funding as part of FireSmart Coordinator salaries.
3	High	Continue to promote FireSmart to EA-F residents at community events, public spaces, and through workshops using FireSmart branded material and printed manuals (Home and Landscaping) and/or a FireSmart Canada Community Preparedness Day. Show a united front by having local government, fire department members, and FireSmart coordinators at events together as much as possible.	Observed adherence and uptake of FireSmart principles on private property and many homes/structures in EA-F is lacking. Landscaping (conifer hedges), firewood and combustible materials storage, and external building materials are the biggest issues. FireSmart BC resources help present a unified message. Print resources are popular and easy to distribute. FireSmart branded tents, banners, and t-shirts can be purchased with CRI FCFS funding.	EA-F / RDCK	Annually	Quantity of resources distributed/number of times used at events.	CRI FCFS up to cost maximums.
4	High	Update RDCK's FireSmart webpage with the most recent FireSmart graphics and language. Provide links to the current fire danger rating, or better yet, have that posted on the front of this page (making sure to keep it updated during the fire season).	To continue to provide to most recent and up to date FireSmart information, language, and principles to residents (and visitors).	RDCK	Annually	RDCK FireSmart webpage is showing current FireSmart information and graphics.	CRI FCFS up to cost maximums.

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
5	High	Continue the FireSmart social media campaign, with updated FireSmart graphics and language, through various RDCK/EA-F social media platforms (i.e., Facebook, Twitter, Instagram), including those from Volunteer Fire Departments (VFDs).	To promote FireSmart information to residents (and visitors). Include links to graphics, videos, pdf information/pamphlet downloads, etc.	EA-F / RDCK	Annually	An organized FireSmart social media campaign is delivered throughout RDCK.	CRI FCFS up to cost maximums.
6	High	Continue to promote FireSmart in EA-F schools using the FireSmart Education Kit and other resources.	Great success has been made through BC schools with FireSmart outreach. Engaging with the community's younger population may increase uptake with all residents.	RDCK / School District 8	Annually	One FireSmart lesson delivered each year (minimum).	CRI FCFS; e.g. FireSmart Magnetic Board for $1,710.
7	High	Continue to promote free FireSmart Home Ignition Zone assessments and/or Home Partners Program assessments to residents.	FireSmart Home Ignition zone and Home Partners Program assessments introduce residents to FireSmart, its principles, fire and wildfire risks associated with their home and property, and how they can be mitigated. These assessments are primarily an educational exercise, and can be funded completely through CRI FCFS. They are a requirement to qualify for the FireSmart rebate program (see Section 5.7).	EA-F / RDCK	2 years	FireSmart Home Ignition Zone assessments are being completed within EA-F.	CRI FCFS up to cost maximums.
8	Moderate	Consider door-to-door knocks in neighbourhoods (such as Pass Creek) that have communication constraints to discuss wildfire risk and FireSmart principles that they can apply to their home and property.	Although wildfire can affect all areas of EA-F's WUI, some communities are more at risk due to risks/constraints not associated to wildfire – such as no cell service and low community turnouts at public FireSmart events. Door to door knocks by Fire Chiefs, fire department personnel, and FireSmart Coordinators have been successful in other communities.	RDCK / EA-F VFDs / FireSmart Coordinators	2 years	Visits to homes in these WUI neighbourhoods from local government/ FireSmart/ fire department members (with FireSmart information left at	In-house personnel time. CRI FCFS for FireSmart materials.

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
						their door) have started.	
9	Moderate	Increase public awareness of this Community Wildfire Resiliency Plan.	Increasing awareness of wildfire risk also increases community resiliency through household emergency planning, and support for FireSmart.	EA-F / RDCK	1 year from CWRP completion	Awareness by residents - consider a survey.	Staff time to update website, and media posts. Newspaper ads ~$300 each.
Visitors							
10	High	Lobby BC Parks to install FireSmart educational signage at all BC Park camp and recreation sites within EA-F, starting at Kokanee Creek. RDCK should follow suit for all regional parks.	These signs provide both visitors and residents a quick snapshot of how their actions and activities can inadvertently increase wildfire and ignition risks, as well as introduces visitors to FireSmart – a message they can take home with them.	EA-F / RDCK / BC Parks	5 years (signs installed)	Wildfire risk signs at the highest traffic parks have signs.	Sign cost ~$800 for purchase and installation per sign.

5.3 LEGISLATION, PLANNING AND DEVELOPMENT CONSIDERATIONS

Legislation and planning regulation are effective tools for proactively reducing wildfire risk, although they can be less effective in large, rural regional districts like RDCK than in dense municipalities due to difficulties in enforcement. However, private property FireSmart Home Ignition Zone and structure risk reduction is the most effective avenue towards homes and structures surviving a wildfire event. One of the most powerful influences that legislation and planning can have on local wildfire risk is through wildfire hazard Development Permit Areas (DPAs).

Section 2.2 provided a comprehensive look at local plans and bylaws that are currently in place and relevant to wildfire resilience. EA-F has embedded FireSmart principles into its Rural Official Community Plan, primarily focussing on subdivision requirements and access to water and the forest land through private property for emergency responders. Currently, only voluntary efforts are encouraged to reduce fire risk to existing buildings and developments by residents.

One of the priorities for recommendations within this Plan is to manage fire risk to structures within their Home Ignition Zones (i.e., within 30m of the structure and the structure itself). This is supported in OCP section 20.1.d Development Permit Areas which states, “Site design should consider susceptibility to natural hazards, including but not limited to flooding, slope instability, or wildfire risk.” As part of the 2022 Wildfire Development Permit Area Study, draft wildfire Development Permit Areas (DPAs) were developed for the RDCK but have not yet been implemented. The purpose of a wildfire DPA is to manage wildland-to-structure fire transfer (and vice versa), achieved through the application of FireSmart principles. The BC Building Code, which to date manages room-to-room and structure-to-structure fire transmission, is currently being updated, with roll out planned for late-2024, and may include FireSmart standards. RDCK should review and assess what FireSmart principles are included and compare them to the draft Wildfire Development Permit Areas (DPAs), update the draft DPAs as required, then initiate a process to implement the wildfire DPAs, if still required, to manage for risks not addressed in the new Code.

Additionally, it is recommended that the OCP update language referencing “fire risk” (e.g., OCP sections 17.4 and 17.6) to refer to the Local Wildfire Risk Analysis developed as part of this plan, as it more accurately reflects current fire risk for EA-F’s WUI than currently available provincial data.

Part of development considerations is ensuring that all critical infrastructure (described in Section 3.3 and listed in Table 8) are constructed or brought up to a high FireSmart standard. Performing FireSmart Critical Infrastructure Assessments on those infrastructure that have not had one completed yet (in priority sequence) will detail which are most at risk to wildfire, and what mitigation activities should be performed to reduce those risks. Additionally, including a policy in the OCP stating that all regional district structures are built and landscaped to FireSmart standards would ensure these structures are wildfire resilient from the start as well as provide examples of FireSmart construction and landscaping to the public.

Recommended changes to planning and development for EA-F are detailed in Table 19.

Table 19: Legislation, planning and development recommendation and action items

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
Legislation, Planning and Development - Section 5.3							
11	High	Upon the roll-out of the new BC Building Code in 2024, RDCK should review and assess what FireSmart principles are included and compare them to the draft Wildfire Development Permit Areas (DPAs). Update the draft DPAs as required. Initiate a process to implement the wildfire DPAs, if still required, to manage for risks not addressed in the new Code.	FireSmart construction and landscaping policies manage for wildland-to-structure fire transfer (and vice versa). Over time, resiliency will be built up at the interface and intermix areas.	EA-F / RDCK (Consultant)	Upon BC Building Code roll out	All new development complies with the policy.	CRI FCFS: up to $10,700 available to apply to incremental staff hours or contract cost.
12	High	Update references to “fire risk” in EA-F’s OCP (e.g., sections 17.4 and 17.6) to include referencing the Local Wildfire Risk Analysis developed as part of this plan, as it more accurately reflects current fire risk for EA-F’s WUI than currently available provincial data.	EA-F should look to the most recent and accurate wildfire risk analysis for its WUI to be used to determine areas of Moderate and High wildfire threat for reducing wildfire threat through community planning and development purposes.	EA-F / RDCK (Consultant)	Upon next OCP review and update	OCP update that includes FireSmart construction/development policies for single home and lot development and major renovations.	CRI FCFS: up to $10,700 available to apply to incremental staff hours or contract cost.
13	High	Consider adopting a Wildfire Landscaping Bylaw to restrict flammable landscaping. Example: prohibit conifer vegetation in the Immediate Zone of a residence or structure (0-1.5 m) and prohibit the planting of new conifer vegetation in Priority Zone 1 (1.5-10 m). Highly flammable landscaping plants (ex., cedar hedges) were noted throughout the Township, especially on more densely populated streets. This can be an effective communication tool regardless of enforcement capacity.	Highly flammable landscaping plants (ex., cedar hedges) were noted throughout EA-F, especially on more densely populated streets. Landscaping vegetation can act as a wick, moving fire to homes/structures and throughout communities.	EA-F / RDCK (Consultant)	5 years	A Wildfire Landscaping Bylaw is in effect.	CRI FCFS: up to $10,700 available to apply to incremental staff hours or contract cost.
14	High	Continue to conduct FireSmart Critical Infrastructure Assessments for public works and community/ government buildings. Conduct FireSmart mitigation as soon as possible (vegetation management, material upgrades). Set a priority sequence for assessment based on wildfire response and post-wildfire recovery. Encourage and support privately owned community halls that act as community shelters, and private or community owned critical infrastructure, to do the same.	Protecting water systems, emergency shelters, and community infrastructure is critical to wildfire response and recovery. Assessments have already been completed for EA-F fire halls.	EA-F / RDCK (Local FireSmart Representatives; FireSmart Coordinator; and/or Consultant)	Ongoing	Number of assessments completed and mitigation hours/investment	CRI FCFS: up to $800 per assessment and up to $50,000 for mitigation per structure (publicly owned only).

5.4 CROSS-TRAINING AND FIRE DEPARTMENT RESOURCES

All staff and agency partners who are expected to participate in the development and implementation of this plan, or participate in a wildfire response and recovery, should be appropriately trained. This includes RDCK Emergency Management staff, other municipal staff that could play a role in an Emergency Operations Center (EOC), and EA-F Volunteer Fire Departments. Training opportunities include:

- Basic Wildland Fire Suppression and Safety
- Incident Command System[54]
- FireSmart 101
- FireSmart Local FireSmart Representative (LFR)
- FireSmart Community Champion
- FireSmart Home Partners Wildfire Mitigation Specialist (WMS)
- Post-wildfire reclamation and recovery
- Post-wildfire structure damage assessment
- BC Structure Protection Program (WSPP-115)

Regular in-person cross-training between agencies is imperative for familiarization with each other's equipment and to address any incompatibilities. BCWS noted that there is annual cross-training conducted between EA-F Volunteer Fire Departments and the BCWS zone staff,[55] however, Beasley VFD noted that no formal cross-training had been done in some time. Additionally, valuable training through experience can be acquired from being deployed to wildfires. Under the Fire Chiefs' Association of BC and BC Wildfire Service MEMORANDUM OF AGREEMENT for INTER-AGENCY OPERATIONAL PROCEDURES AND REIMBURSEMENT RATES, fire departments (including those in EA-F) routinely work with BCWS in response to incidents within and outside of Fire Protection and Response Areas. Thus, fire departments should maintain a level of wildland-specific training and equipment.[56] Equipment currently held at the Beasley and North Shore VFD fire halls, and levels of wildfire certification, are detailed below in Table 20.

Table 20: Wildfire training and wildland equipment of the Beasley Volunteer Fire Department.

EA-F Fire Department and Service Area	Training/Experience	[Wildland] Equipment
Beasley VFD Grohman Sproule Creek Taghum Beasley Bonnington	- SPP-WFF1: all persons certified, plus annual refresher completed. - WSPP-115: nine members with certification, five trained without certification. - SPP-WFF train-the-trainer certified: two captains.	- Several portable pumps, a decent amount of hose, fire resistant Wildland PPE. - RAM 2500 4x4 Utility/Wildland truck with portable skid unit. - US Cargo wildland trailer with severely portable skid units.

[54] RDCK Emergency Program staff are trained in ICS.
[55] Information gathered from BCWS questionnaire as part of the development of this Plan.
[56] Beasley VFD noted working with BCWS crews for wildfire response usually one to three times per season.

EA-F Fire Department and Service Area	Training/Experience	[Wildland] Equipment
North Shore VFD[57] Willow Point & area Nasookin & area Johnstone Road	- Some members with SPP-WFF1, WSPP-115, and SPP-WFF train-the-trainer.	- Several portable Mark-3 water pumps with wildland hose. - 4x4 tender truck. - 2024 budget includes purchasing a rapid-attack wildland vehicle.

Water is the most important resource for fighting wildland and structure fires. Willow Point and Taghum are the only communities in EA-F with District-operated and managed water supply and associated fire hydrant systems, however others (such as Bonnington) have private systems with hydrants (discussed in Section 3.2 and 3.3.2). Natural water sources are a valuable source of water that can be used for wildfire fighting (especially during summer drought conditions). Kootenay Lake and Kootenay River have water available year-round – having these sources with access points available to firefighters is strategically important, as echoed in EA-F's OCP section 17.10 which supports protection of accesses to water sources such as hydrants, standpipes, lakes, and streams to remain free of obstructions for fire protection purposes.

An example of community-led water development for wildfire fighting was initiated in 2020 by the Argenta Emergency Preparedness Group (AEPG; in EA-D). They began a water mapping project (with assistance from a Selkirk College student), which received additional support in 2023 from Living Lakes. With a goal creating quick access to valuable information for fire response (local and BCWS), a focus has been on available water sources:

- Over 30 locations have been GPS'd where a fire pump could be quickly set up, including photos and access information and detailed information about each site.
- Existing standpipes with fire hose fittings were detailed in a similar fashion, noting water pressure and pipe sizes.

Table 21 lists recommendations for RDCK and EA-F related to cross-training and fire department resources.

[57] Provided by Local Government, not directly from the Fire Department.

Table 21: Cross-training recommendation and action items

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
Cross Training & Fire Department Resources - Section 5.4							
Training							
15	High	Continue to support 'train-the-trainer' programs so that required courses (e.g., S-231, WSPP-115) can continue to be delivered in-house to EA-F fire department members.	To continue providing an opportunity to expand in-house wildland specific training, and potentially train adjacent fire departments or community groups.	RDCK / EA-F / EA-F fire departments	Annually	Number of firefighters (both paid and on-call volunteer) with wildland training beyond maintains or increases.	Staff time; CRI FCFS Training. Columbia Basin Trust funding.
16	High	Support FireSmart specific training to EA-F fire departments. Examples include: FireSmart 101, Local FireSmart Representative (LFR), and FireSmart Home Partners Mitigation Specialists.	To build understanding and knowledge of FireSmart principles within fire response area fire departments. To certify fire response area fire department members so they can implement various FireSmart assessments within the community.	RDCK / EA-F / EA-F fire departments	Annually	Number of firefighters (both paid and on-call volunteer) with FireSmart training increases.	Staff time; CRI FCFS funding is available for training.
17	High	EA-F fire departments should seek out (and be supported by RDCK/EA-F in doing so) opportunities to perform wildfire response and structure protection drills - using hydrants, standpipes, and natural water sources, *with* BCWS.	Fast and effective deployment of available Structure Protection Units (two are owned by RDCK) and any additional equipment that the fire departments have will be crucial in any interface fire scenario. Equipment compatibilities and/or differences between those available and what equipment BCWS uses should be identified and addressed ahead of time.	Fire Response Area Fire Departments (BCWS)	Annually	Drills performed at least once annually in different communities with different water sources.	Staff time as required.

Water							
18	High	Continue to identify and map natural and artificial water sources useable for fire suppression across the entire regional district. Having a digital map would allow it to be uploaded into response vehicles' CAD systems, shared with BCWS response personnel, as well as included in the pre-planning of emergency community water delivery systems connecting major natural water sources with interface communities, to facilitate deployment of a structural protection system. Include important details such as: estimated water volume and access point notes. Share this information to all mutual aid fire response partners, and update over time.	Most firefighting service in EA-F requires water shuttling. Wildfire fighting response almost always relies upon local water sources. This impacts EA-F's wildfire resilience. Shuttling or pumping water from lakes and rivers to fill bladders can be pre-planned, including tender access points, traffic control, permanent large-volume pumps, and piping.	RDCK GIS department/ EA-F fire departments (to aid in identification for their service areas or share data already acquired) (BCWS)	5 years and ongoing	A fire suppression water source plan and map are produced and shared.	CRI FCFS Community Water Delivery Assessment funding available for incremental staff hours or contract cost.
19	High	In coordination with recommendation #18, create opportunities for BCWS to work with independent water systems to identify assets. Assist those communities in retrofitting their systems to be compatible, if required.	Reducing barriers to BCWS for accessing water sources in the WUI increases opportunities to fight WUI fires.	RDCK / FireSmart Coordinator (BCWS)	Annually	Communities with self-managed water systems are meeting with BCWS.	EA-F, BCWS, and community time.
20	Moderate	EA-F fire departments should seek (or continue to uphold, if accredited already) Superior Tanker Shuttle Service accreditation from Fire Underwriters Survey.	This accreditation certifies that the fire department can supply enough water to have some areas without fire hydrants within a certain distance of their structures qualify as having a fire hydrant within 300m of it (this can also potentially lower insurance rates for property owners within the EA-F fire response areas). Note: this does not increase the overall water supply already available under automatic and mutual aid agreements.	EA-F fire departments/ RDCK	5 years	Superior Tanker Shuttle Service accreditation achieved by fire response area fire departments.	fire response area fire departments staff time as required (and EA-F budget for equipment upgrades and purchases, if needed).
Equipment and Staff							
21	High	In coordination with recommendations #17 and #18, the EA-F fire departments should continue (or begin, if not done already) annual inspections by BCWS of their wildland firefighting equipment. Any gaps should be addressed, as required.	To ensure proper equipment is available to respond to interface wildfire events, and that equipment is compatible with BCWS's. CRI FCFS funding is available for incremental equipment purchases.	EA-F fire departments (RDCK; BCWS)	Annually	Annual inspection of wildland firefighting equipment from BCWS; gaps filled as practicable.	Fire department and RDCK staff time; CRI FCFS equipment funding up to cost maximums.

5.5 INTERAGENCY COOPERATION

The goal of interagency cooperation is to approach wildfire resilience through a collaborative, multi-agency approach. This increases the ability of local governments to plan and respond to emergencies effectively. Cooperation and communication are especially critical for EA-F as there are multiple jurisdictions side-by-side (EA-F, City of Nelson, RDCK Electoral Areas D and F) and multiple land managers currently operating (e.g., Harrop-Procter Community Forest, Columbia Basin Trust). Landscape-level fire resilience cannot effectively be achieved without planning for resilience across jurisdictional boundaries. Engagement can be formal or informal and can take place through existing communication channels or stand-alone committees.

Community FireSmart Resiliency Committees (CFRC) reflect the local land managers, Local Government, and wildfire and emergency response agencies in an area. Several are in operation throughout the RDCK, as well as for some local municipalities. It is not known if EA-F elected representatives (e.g., Electoral Area Director) participate in one; both the Beasley VFD and North Shore VFD Fire Chiefs noted they did not (they do participate in RDCK Emergency Management meetings). Due to its adjacency to the City of Nelson, EA-F elected representatives, as well as VFD Fire Chiefs, should look to participate in the Nelson CFRC. This committee meets numerous times per year to coordinate cross-jurisdictional FireSmart and fuel mitigation planning within Nelson and surrounding RDCK electoral areas. Additionally, EA-F Fire Chiefs also participate in an annual Zone 4 Fire Chiefs meeting that includes BCWS representatives to ensure wildfire emergency pre-organization is in place, policy changes are discussed, and opportunities to improve mutual aid for fire response are capitalized on.[58]

Mutual aid agreements exist between BCWS and RDCK fire services. This is captured in the Memorandum of agreement for Inter-Agency Operational Procedures between the Fire Chief's Associated of BC and the BC Wildfire Service. Mutual aid agreements exist between BCWS and RDCK fire services. This is captured in the MEMORANDUM OF AGREEMENT for INTER-AGENCY OPERATIONAL PROCEDURES AND REIMBURSEMENT RATES between the Fire Chief's Association of BC and the BC Wildfire Service.

When planning and implementing forest harvesting and fuel management treatments in the community and in adjacent forest tenures, a high-level tracking and communication of fuel treatments needs to occur. It is imperative that all land managers know what adjacent or overlapping jurisdictions have identified as fuel breaks, so that time and money is not wasted reassessing or re-prescribing an area. As EA-F's WUI is extensive in area, RDCK (via the CFRC) should develop a process for spatially tracking and managing proposed and completed fuel management/fuel break units in the greater regional district area that all members can access. Although RESULTS[59] is a powerful spatial tool to keep track of forest activities on the Provincial land base, it does not include activities on municipal and First Nations land. A separate spatial layer should be maintained by Ministry of Forests (MOF) as a public service using inputs from municipalities, First Nations, and forest licensees. Changes to the MOF Wildfire Risk Reduction program

[58] Information gathered from BCWS questionnaire as part of the development of this Plan.
[59] Government application that tracks silviculture information by managing the submission of openings, disturbances, silviculture activities and obligation declarations as required by the Forest and Range Practices Act.

(which manages wildland fuel treatments on the Provincial land base) in the coming years may solve some of these problems.

BC Timber Sales, woodlots, and volume-based licensees have tenure overlaps with EA-F's WUI. Forest activities can both increase and decrease wildfire risk in WUI areas and BCWS stated that Category 3 industry burning has led to fire starts and continues to be a concern every spring. Forest harvesting practices such as strategic cutblock placement, reducing post-harvest slash, providing loads of firewood to the public, and implementing fire management stocking standards as part of reforestation efforts can reduce wildfire behaviour for harvested areas within the WUI.

Discussed in Section 3.3 transmission lines can provide excellent fuel breaks and access for first responders in the event of a wildfire – if the vegetation on them is regularly managed and kept in a low-hazard state. They can also be the source of fire ignitions - trees and other vegetation intruding into power lines can cause fires in multiple ways. Highways and rail lines can also provide excellent fuel breaks if the vegetation on them is regularly managed and kept in a low-hazard state. If not, they can act as wicks moving fire along them, or ignition sources for fires from burning cars, cigarette butts, sparks, etc. Additionally, highways are a main access/egress route during an emergency – these routes should be kept at as low risk of state as possible.

Table 22 details Interagency Cooperation recommendations for RDCK, EA-F, and local stakeholders.

Table 22: Interagency cooperation recommendation and action items

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
Interagency Cooperation - Section 5.5							
22	High	Engage (or continue to) with the established local Community FireSmart Resiliency Committee (CFRC) to plan, implement, and coordinate FireSmart initiatives, including fuel management treatments. Look to include EA-F volunteer fire department Fire Chiefs.	To provide a platform for information sharing. All parties have indicated a willingness for collaboration, which will allow for greater management of wildfire risk both within and surrounding EA-F's WUI.	Recommended Nelson CFRC	Ongoing	CFRC FireSmart meeting takes place at least once annually.	At least 8 hours per meeting to prepare, participate and debrief. CRI FCFS up to $2,000 per meeting.
23	High	As communities self-organize for FireSmart initiatives, and even take up the FireSmart Canada Neighbourhood Recognition Program (see Recommendation #43), RDCK and EA-F should look to support their inclusion in a CFRC, or develop local sub-committees, as required.	To further community involvement in FireSmart and wildfire risk reduction activities at the community level.	RDCK / EA-F FireSmart Coordinator	Ongoing	Additions to existing CFRCs are made, as required, or new ones are established, as needed.	Cost and time dependent upon level of effort required.
24	High	Work with RDCK, CFRC members, and MOF to develop a fuel treatment/fuel break tracking system to spatially manage proposed and completed fuel management areas both within EA-F's WUI and outside it at the regional level.	It is imperative that all land managers know what adjacent or overlapping jurisdictions have identified as fuel breaks, so that time and money is not wasted reassessing or re-prescribing an area.	CFRC / MOF / RDCK	As soon as possible	A regional GIS tracking system is established, or a provincial one is developed that CFRC members can access.	Cost and time dependent upon level of effort required.
25	High	Lobby forest land licensee/managers (e.g., BC Timber Sales, Woodlots, volume-based licensees) to be aware of where their tenure overlaps EA-F's WUI and to develop and implement (or continue implementing) forest planning, harvesting, slash management, and reforestation plans that reduce wildfire behaviour in these areas.	Cutblock placement can break up the forest continuity across the landscape – with proper slash and reforestation management, they can remain as areas of low wildfire behaviour for many years. However, if not managed properly, they can increase wildfire behaviour.	RDCK / EA-F / MOF / Forest Licensees and Managers / Local Government elected officials/ Community members	Ongoing	Forest licensees/ managers are aware of their tenure overlaps with the WUI and are actively working towards forest management plans to reduce wildfire behaviour in those areas.	RDCK/EA-F staff time for discussions.

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
26	High	Lobby and work with the electrical power providers in and influencing the community's WUI, MOTI for Provincial highways, and rail line owners/operators to regularly maintain their right-of-way's vegetation.	Transmission lines can provide excellent fuel breaks and access for first responders in the event of a wildfire – if the vegetation on them is regularly managed and kept in a low-hazard state. They can also be the source of fire ignitions - trees and other vegetation intruding into power lines can cause fires in multiple ways. Highways can also provide excellent fuel breaks if the vegetation on them is regularly managed and kept in a low-hazard state. If not, they can act as wicks moving fire along them, or ignition sources for fires from burning cars, cigarette butts, sparks, etc. Additionally, highways are a main access/egress route during an emergency – these routes should be kept at as low risk of state as possible.	RDCK / EA-F (MOTI; Local Government elected officials (Electrical Providers; Rail line operators)	Yearly and ongoing	Right-of-way maintenance discussions are open and ongoing; right-of-ways are kept in low-risk states.	RDCK/EA-F staff time for discussions.

5.6 EMERGENCY PLANNING

Local government and community preparations for a wildfire emergency are very important. Plans, mutual aid agreements, resources, training, and emergency communications systems make for effective wildfire response. The RDCK Emergency Plan includes EA-F and the RDCK Emergency Program conducts tabletop exercises yearly with staff (and responds to emergencies involving evacuations almost yearly).

Clear, consistent, concise, and quick communication during an emergency event and evacuation are integral to the prevention of loss of life. The RDCK has upgraded to a new notification system for emergency alerts and water advisories powered by “Voyent Alert!”. Downloadable as an app to a smart phone, the user can receive a detailed map of the affected area. The system also supports text messaging, emails, or landline calls. RDCK and EA-F should promote this notification to residents as much as possible.

Most of EA-F’s WUI is only accessible by roads through private property. This is a significant constraint to wildfire first responders as those road conditions are largely unknown. This constraint is recognized in EA-F’s Rural Community Official Plan in section 18.3.8 which, “Encourages that private roads that access forest lands should be of adequate design to allow for the safe movement of logging and fire-fighting equipment.” Access by emergency responders to the WUI is paramount towards both defending communities from WUI fire events, but also for aiding in fuel treatment practicability.

Additionally, it was noted during field assessments, and echoed in meetings with local government and first responders, that there is a pervasive lack of visible, reflective addresses for properties within EA-F. Addresses are one of the most common forms of providing first responders directions of where to respond to. This issue should be made aware to the public with examples and options of proper signage.

A pre-incident plan is a compilation of essential fire management information needed to save valuable time during fire suppression operations. During a busy wildfire season, Provincial resources are often stretched thin, and any information that local governments can provide to BCWS crews is helpful. A pre-incident plan should be developed and tested using tabletop simulations, and if necessary, revised prior to every fire season. BCWS should be involved in this process to ensure that any mapping done as part of the pre-incident plan or Fire Management Planning process is not unnecessarily duplicated.

Figure 13 contains a checklist of discussion points and considerations during pre-incident plan development.

Figure 13. A pre-incident planning checklist that can be used to help develop a pre-incident wildfire suppression plan and associated maps.

EA-F, in conjunction with its CFRC and regional district partners, could also consider developing local daily action guidelines based on expected wildfire conditions. Table 23 below provides a template that can be tailored specifically to EA-F, outlining actions staff can take as fire danger levels change throughout the fire season.

Table 23: Example of a Wildfire Response Preparedness Condition Guide[60]

FIRE DANGER LEVEL	ACTION GUIDELINES
LOW	• All District staff on normal shifts.
MODERATE	• All District staff on normal shifts. • Information gathering and dissemination through Nelson's CFRC.
HIGH	• All District staff on normal shifts. • Regional fire situation evaluated. • Daily fire behavior advisory issued. • Wildland fire-trained District staff and EOC staff notified of Fire Danger Level. • Establish weekly communications with CFRC.
EXTREME	• Daily fire behavior advisory issued. • Regional fire situation evaluated. • EOC staff considered for stand-by. • Wildfire Incident Command Team members considered for stand-by/extended shifts. • Designated District staff: water tender and heavy machinery operators, arborists may be considered for stand-by/extended shifts. • Consider initiating Natural Area closures to align with regional situation. • Provide regular updates to media / District staff on fire situation. • Update public websites and EA-F social media as new information changes.
FIRE(S) ONGOING	• All conditions apply as for 'Extreme' (regardless of actual fire danger rating). • Mobilize EOC support if evacuation is possible, or fire event requires additional support. • Mobilize Wildfire Incident Command Team under the direction of the EOC/Fire Chiefs. • Implement Evacuation Alerts and Orders based on fire behavior prediction and under the direction of the EOC/Fire Chief.

Emergency planning also includes the recovery from an emergency. As discussed in Section 3.3.1, having secondary power sources for critical infrastructure is important to reduce community vulnerability in the event of an emergency that cuts power for days, or even weeks.

Roof top and gutter-mounted sprinklers are a useful tool that can be easily stored and then set up, as needed, by individual homeowners (if they have the required water availability). BCWS can also link their water systems to them to support their firefighting efforts. Three main mounting types exist: temporary mounted sprinklers (fully removable), permanently mounted sprinklers, and permanent sprinkler mounts that sprinklers can then be attached/removed from. There are benefits and disadvantages to all, especially as structures can differ significantly from one another, however, the benefits to using permanent sprinkler mounts as the preferred choice were noted as such by the Beasley Fire Chief: permanent rooftop sprinklers are time consuming and difficult to access for troubleshooting; sprinklers on pipes that can be

[60] From FireSmart Community Funding and Supports 2022 CWRP Supplemental Instruction Guide

lifted and set onto the permanent mounts from the ground are fast to deploy, easy to lift down when repairs or replacement are needed; and, they reduce sprinkler deterioration rates from not being left in place year-round. Local Government and community organizations can spearhead the acquisition and planning of sprinklers and structure protection units (SPUs) themselves, moving the planning and organization off the individual homeowner and increasing community wildfire resiliency. Additionally, there can be cost savings in bulk orders.

RDCK has two Type 2 SPUs which are regional assets, and firefighters from all 16 RDCK supported fire departments that can be deployed as needed. One SPU is (generally) stationed at the Kaslo and Area Fire Department Hall. It should be noted that under the interagency agreement, when the SPUs are needed, they are requested by the local authority for use within a fire protection area and by BCWS for use outside of the fire protection area. Regardless of the requestor, they are sourced by BCWS. The cost of deployment is reimbursed by the Province. BCWS may or may not opt to use local SPUs to be deployed to a fire.

Recommendations and action items that RDCK and EA-F can implement to continue productive and effective emergency planning are detailed below in Table 24.

Table 24: Emergency preparedness recommendation and action items

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
Emergency Planning - Section 5.6							
27	High	Continue tabletop wildfire scenario tabletop exercises with emergency management and CFRC partners. Yearly, pre-fire season is best. Move the "WUI fire" to a different area of EA-F's WUI each time.	Tabletop exercises provide an opportunity to identify weak spots in a plan and collaborate.	RDCK (CFRC; RCMP; BCWS)	5 years	Knowledge of 'pinch points' in an evacuation scenario and understanding of roles and responsibilities.	CRI FCFS Emergency Planning: up to $2,000 per meeting. Possibly CRI / CEPF / Columbia Basin Trust
28	High	RDCK and EA-F should continue to promote the Voyent Alert! System to residents and visitors.	Clear, consistent, concise, and quick communication during an emergency event and evacuation are integral to the prevention of loss of life. A lack of this was identified as an issue during recent WUI fire disasters, such as that in Lahaina, Maui, USA and Fort McMurray, Alberta.	RDCK (FireSmart Coordinator)	Ongoing	Continued update of the Voyent Alert! System (can track downloads from app providers).	RDCK for promotion.
29	High	Invest in back-up generators for any critical infrastructure that does not have one. Encourage private businesses that provide critical services, like gas stations and grocery stores, to follow suit.	Back-up generators for pumphouses, treatment plants, and community buildings (especially those designated as emergency shelters) would facilitate both emergency response (water supply for suppression) and rapid community return and recovery following a fire.	RDCK / EA-F (Private Industry)	ASAP	A budget and purchase plan for back-up generators is implemented, starting with the most critical infrastructure.	Cost varies - ~$10,000
30	High	Initiate a roof-top sprinkler program for residential properties. Investigate bulk orders from wildfire protection or irrigation companies or commercial gutter-mount kits. Consider sprinkler kits as an incentive to communities/neighbourhoods for FireSmart participation. Discuss with local Fire Departments and BCWS what mounting/sprinkler types are best. This can be directly led by RDCK, or RDCK can offer support to local fire	Rooftop sprinklers reduce the time and resources needed to set up a structural protection system in a community threatened by wildfire. Sprinkler installation/acquirement could be paired with a free FireSmart Assessment.	RDCK / EA-F (EA-F fire departments; BCWS)	3 years and ongoing	Establish an efficient and effective system. Track the number and location of sprinklers purchased and installed annually.	Bulk sprinklers $40 - $100 each; gutter mount kits ~$100-200 for one home

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
		departments and community organizations to assist doing so.					
31	High	Schedule regular updates of this Community Wildfire Resiliency Plan: target every 5 years.	A current and acceptable CWRP is required for funding under the CRI FCFS program. Update the wildfire threat for areas with completed fuel treatments and identify additional areas for treatment.	RDCK / EA-F	5 years – 2028 update	EA-F always has a current and acceptable CWRP.	~$32,000; CRI FCFS funding
32	Moderate	Pre-plan emergency community water delivery systems to connect major natural water sources with interface communities/neighbourhoods to facilitate deployment of a structural protection system. This can be supported by recommendation #18. The Argenta Emergency Preparedness Group has been working on this since 2023 (see Section 5.4).	RDCK has many large natural water bodies and streams/creeks to draw from in the event of a wildfire. Shuttling or pumping water from lakes and rivers to fill bladders may be planned in advance, including tender access points, traffic control, permanent large-volume pumps and piping.	RDCK / EA-F (BCWS)	5 Years	Assess community water delivery for each neighbourhood. Develop and test neighbourhood specific plans.	CRI: Assessment of Community Water Delivery Ability - incremental staff hours or contract cost
33	Moderate	Promote the installation of visible and reflective addresses in EA-F. Consider and explore how to regulate addressing across the District. Note: RDCK has requested a program to support standardized address signage, but stated that if building permits are not applied for then there is no street address. There are no regulations on addressing.	To allow for faster and more direct response to specific properties by first responders during an emergency.	EA-F / RDCK	5 years	Majority of properties have reflective, visible addresses.	Promotion campaign; consider providing discounted signs. 40-60 hours and $40-60 per sign

5.7 VEGETATION MANAGEMENT AND OTHER FIRESMART ACTIVITIES

VEGETATION MANAGEMENT

As discussed in Section 4.1, fuel is the only aspect of the fire behavior triangle that can be realistically modified to reduce wildfire threat. Fuel or vegetation management reduces potential wildfire intensity and ember, flame, and radiant heat exposure to people, structures, and other values through manipulation of both natural and cultivated vegetation within or adjacent to a community. A well-planned vegetation management strategy can greatly increase first responder safety, fire suppression effectiveness, and reduce damage to property and to values.

Vegetation management can largely be accomplished through two different activities:

1. **Residential-scale FireSmart landscaping**: The removal, reduction, or conversion of flammable [landscaping] plants to create more fire-resistant areas in the FireSmart Immediate, Intermediate, and Extended Zones (i.e., the area within 30m of a structure; see Figure 14 below).

Figure 14: FireSmart Home Ignition Zone

2. **Fuel management treatments:** The manipulation or reduction of living or dead forest and grassland fuels to reduce the rate of spread and head fire intensity and enhance likelihood of successful suppression.

Fuel Management Units

Fuel management treatments may function as fuel breaks (linear features, at least 1 km in length) or polygon treatments for discrete areas. The intent of establishing fuel treatments is to modify fire behaviour and should be designed to keep surface fires on the ground to avoid the establishment of more dangerous and uncontrollable crown fires. Fuel treatments can also provide anchor points to fire-fighting crews for suppression activities,[61] yet the application of appropriate suppression tactics in a timely manner with sufficient resources is essential for fuel treatments to be effective – fuel treatments adjacent to a home or property should not be considered a "fire break". Thus, to increase the efficacy of fuel treatments, FireSmart standards should be applied on nearby private properties to structures and vegetation to reduce the risk of structure ignition. Fuel treatment units will also require periodic maintenance (e.g., brushing, prescribed burning, surface fuel cleanup) to retain their effectiveness.

Implementing fuel management treatments often requires the successful collaboration of various land managers as these treatment areas can span across multiple types of land ownership. Often, this is required for the fuel treatment to effectively connect areas of low hazard, or to be a cohesively effective area. A significant amount of public land within EA-F's WUI is Crown provincial land under various area-based and volume-based licenses. Fuel management projects in woodlots (area-based tenure) are currently funded and administered through the Forest Enhancement Society of BC (FESBC); those on municipal land are funded and administered through the CRI FCFS program; and those on Crown provincial land (not managed by an area-based tenure) are funded and administered through the BCWS Crown Land Wildfire Risk Reduction (CLWRR) Program. EA-F will need to ensure good planning and collaboration with the Selkirk Resource District CLWRR team, forest tenure holders, local government, community groups, and BCWS to achieve higher quality, more effective, and more efficient fuel treatments.

There are many historical (non-mapped) fuel treatment units (FTUs) completed within EA-F's WUI, as well as tracked prescribed (but not treated) and treated FTUs from the FESBC[62], CLWRR, and CRI FCFS programs – these are shown on Map 15 and Map 16 below, in conjunction with the proposed fuel treatment units (PTUs) from this Plan.[63] A number of past proposed but not treated FTUs are re-identified within this Plan due to their assessed risk and proximity to interface structures and communities. PTUs proposed as part of this Plan are discussed and described in Table 26.

Priority level for prescription and treatment (High, Moderate, Low) of PTUs is given to each and is based upon a combination of site-level risks and factors that include wildfire behaviour threat, strategic location, proximity to structures and critical infrastructure, location relative to dominant fire-season wind directions, and overall practicability of treatment implementation. The PTUs identified in this Plan are not a comprehensive list of all areas that qualify for management; they were selected as the highest priority areas that are practicable to implement, present a high risk to their respective communities or a strategic

[61] BC Wildfire Service. (2022). 2022 Fuel Management Prescription Guidance.
[62] E.g., FESBC funded fuel treatments have been completed along portions of the Sproule Creek FSR both within and outside EA-F's WUI.
[63] CLWRR proposed and completed treatments include up to fiscal year-end 2021. CRI FCFS proposed and completed treatments includes up to year end 2022.

opportunity, and meet required funding program goals and requirements as either fuel breaks or fuel treatment areas. Overall, increasing the resilience of EA-F's WUI communities can only be efficiently achieved by performing residential-scale FireSmart activities on private land.

Residential-scale FireSmart Landscaping

Several smaller, community centrally-located PTUs are proposed within this Plan with the additional intention of providing residents with FireSmart vegetation management demonstration projects – showing them what can be done on their properties to reduce similar wildfire risks. A major barrier to implementing FireSmart vegetation management on private property is if there is no easy disposal process for the created vegetative debris. RDCK managed landfills within and adjacent to EA-F (Balfour and Grohman Narrows) accept yard and garden waste for payment – but, during the months of May and October there is no charge.[64] Unfortunately, for many residents in EA-F, transporting material to these stations is too far. Thus, most residents likely rely upon at-home burn piles for garden and yard waste – education around the risks associated with this practice, and how to properly manage them, should be built into EA-F's FireSmart education program.

Other Residential-scale FireSmart Activities that RDCK/EA-F should apply through CRI FCFS and implement include:

- ***FireSmart Canada Neighbourhood Recognition Program***
  The FireSmart Canada Neighbourhood Recognition Program is a unique approach to collaboratively reduce a neighbourhood's risk to wildfire through education and events. It is run nationally through FireSmart Canada and facilitated locally by the RDCK. It is a grassroots, volunteer run program that is assisted by RDCK Wildfire Mitigation Specialists. It is a small-scale approach for neighbourhoods consisting of 5-50 homes, with the intent to implement achievable FireSmart goals (mitigation projects can be small and simple, or complex and extensive, ranging from individual owners doing around home clean-ups, to community hand treatments on common and private land near critical infrastructure).

- ***FireSmart Rebate Program***
  To aid in residential-scale vegetation management and structure improvements, this program allows for residents that have had a completed FireSmart assessment (Home Ignition Zone or Home Partners Program) receive a rebate (using recorded expenses) for work completed to lower risk identified in their assessment. Starting in the 2024 CRI FCFS program, the eligible amount of rebate per property is now $5000.

Associated vegetation management and other FireSmart recommendations and action items are listed in Table 25.

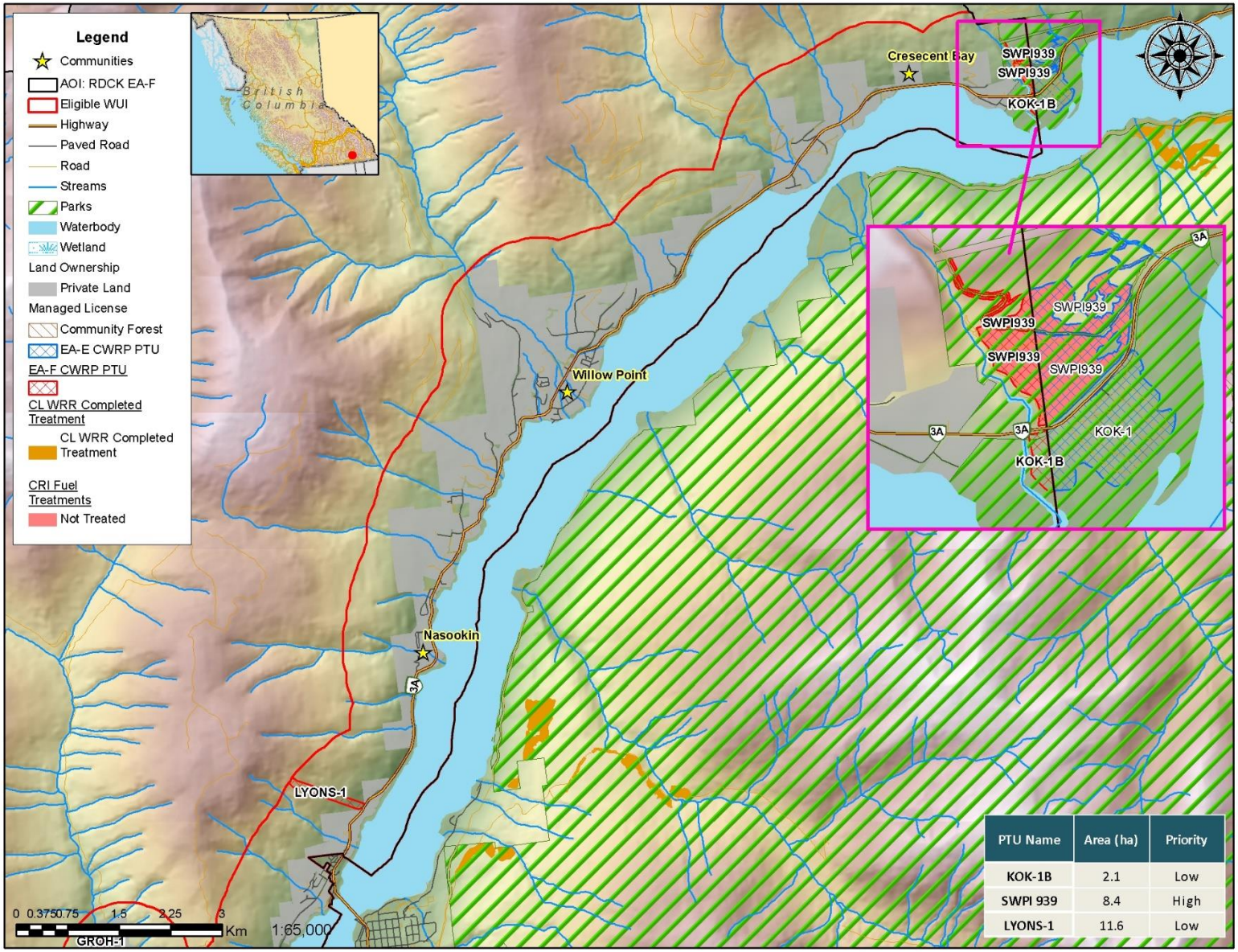
[64] https://www.rdck.ca/EN/main/services/waste-recycling/household-hazardous-waste-round-up/yard-garden-waste-free-tipping.html

Table 25: Vegetation management action items

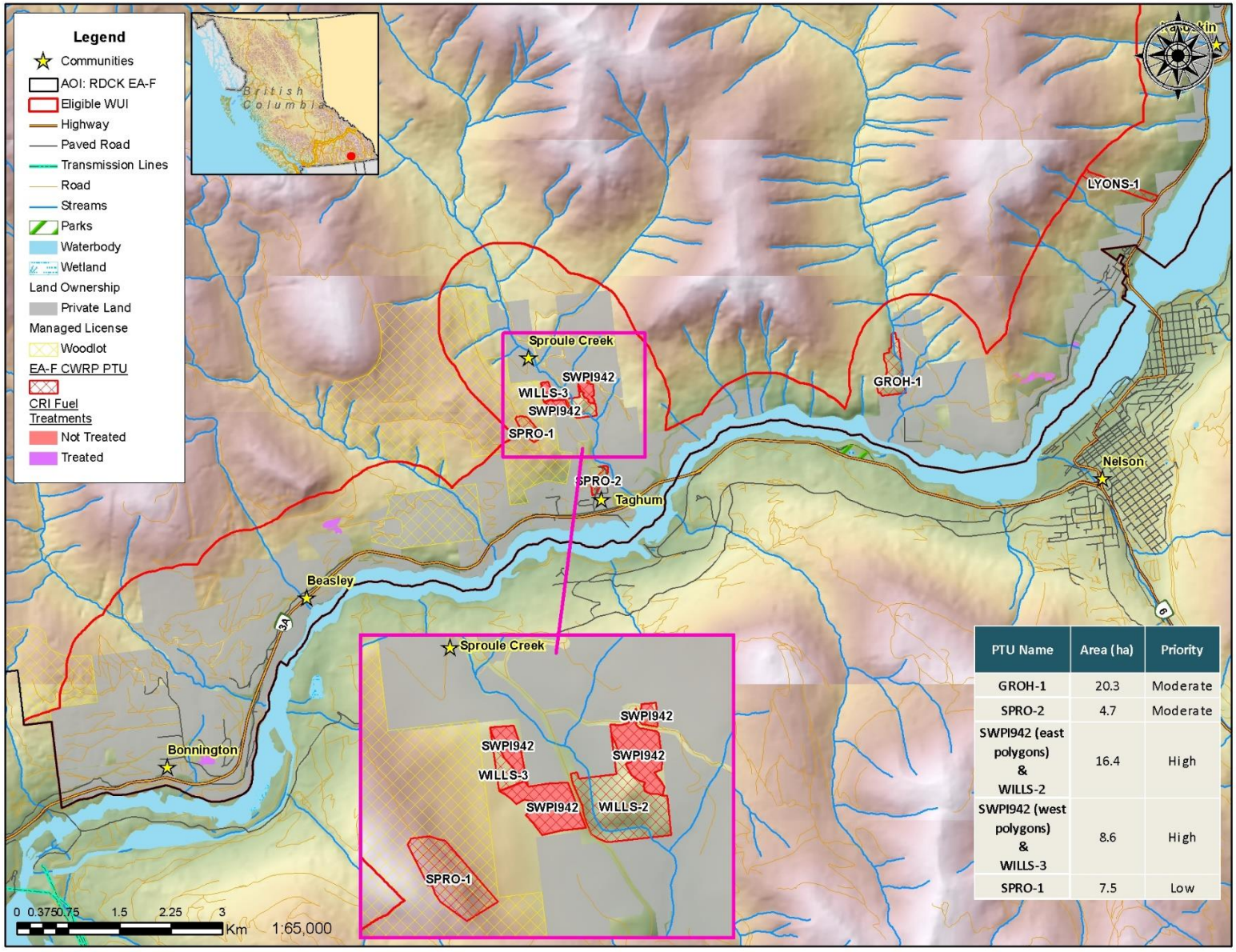
Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
Vegetation Management - Section 5.7							
Fuel Management Treatments							
34	High	Develop fuel management prescriptions for the identified Potential Fuel Treatment Units (PTUs), starting with those identified as High priority. Continue with treatment implementation when possible.	To reduce wildfire threat and risk to interface and intermix communities within the WUI. Also, to provide FireSmart vegetation management examples to the public that can be implemented on their own properties. See "Rationale" column in Table 26 for more detailed treatment rationales.	EA-F / MOF / BCWS	5 years	Approved FMP(s) for identified High priority areas.	CRI FCFS funding available for prescription and treatments; ~$425/hectare for a ~20 ha prescription
35	High	Lobby Provincial Government (Ministry of Forests) and other potential funding organizations for grant funds to implement landscape level fuel treatment on private land.	Much of EA-F's communities' structures are surrounded by undeveloped, forested private land. Current funding streams for fuel reduction at the landscape level are targeted, and thus limited, to public land. However, the interface wildland does not stop at the public/private land border.	Local Government (Provincial Government)	5 years	Discussions initiated and ongoing	Time and cost dependant upon level of engagement required.
Residential FireSmart							
36	High	In conjunction with provided home FireSmart Assessments (see Recommendation #7) Continue offering a local rebate program to property owners that have completed a FireSmart home assessment (Home Ignition Zone assessment or Home Partners Program Mitigation assessment. RDCK, EA-F, and FireSmart coordinators should advertise that the amount eligible for rebate has increased to $5000 for the CRI FCFS 2024 application program.	FireSmart home assessments encourage action in the FireSmart Home Ignition Zone of a community. Offer a rebate program (funded through CRI FCFS) to residents who have a pre- and post-work FireSmart assessment conducted. Focus on removal of conifer hedges and upgrading exterior structure materials.	RDCK / EA-F (FireSmart Coordinator)	Annually	Number of properties participating annually.	50% of costs per property up to $5,000, plus 2 hours administration time per property (CRI FCFS).
37	High	Continue providing regional district-led options for the disposal of yard waste. Currently, this includes having tipping fees waived (May and October) for yard waste at the RDCK transfer stations.	Yard waste burning restrictions limit options for debris disposal. Free debris disposal may be used as an incentive to participate in other FireSmart activities, like assessments or workshops.	RDCK	Annual	Municipally funded yard waste disposal continues.	CRI FCFS funding is available for

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
							tipping fee coverage.
38	High	Consider implementing a community chipper program. Education of FireSmart yard and landscaping principles, including chipping specifications, should be incorporated into the program.	To reduce fire and wildfire hazards on private property within the WUI, especially those long distances from RDCK landfills/transfer stations, and to promote FireSmart vegetation management knowledge and education. The intent is for landscaping/yard vegetation to be included, not farm or agriculture vegetation. This could assist with more uptake of residential FireSmart landscaping principles as the disposal method is brought to the resident, especially for those older and less mobile.	RDCK / EA-F FireSmart Coordinator	Annual (pre-fire season is best)	Number of properties who elect to have debris disposed.	CRI FCFS funding; ~$100-150 per chipper crew hour.
39	Moderate	Consider releasing an annual RDCK FireSmart report to the public that tracks community-specific uptake in various FireSmart initiatives, as well as tracks fuel management at all scales.	As the program grows, reporting allows the RDCK FireSmart program to track challenges and successes, further promote the program, and tailor outreach methods to achieve the most uptake.	RDCK / EA-F FireSmart Coordinator	Annual	An annual report is published.	Eligible for CRI funding – FireSmart staff time. Estimate 40-80 hours.
40	Moderate	Engage with local garden centers to implement the FireSmart BC Plant [Tagging] Program.	FireSmart BC introduced a plant tagging program in 2021 that has been implemented with great success by over 34 nurseries and garden centres to date. The Plant Program is an easy way to provide information at the point of purchase for homeowners and landscapers. See: https://firesmartbc.ca/landscaping-hub/plant-program/	Local Garden Centres (RDCK; EA-F FireSmart Coordinator)	5 years	Local garden centres have been notified of the program.	Staff time for engagement (2-4 hours per garden centre).
Community and Critical Infrastructure FireSmart							
41	High	Implement recommended vegetation management recommendations from FireSmart Critical Infrastructure Ignition Zone Assessments (see Recommendation #14), when completed, on a priority basis.	To reduce fire behavior and risks to critical infrastructure most important to fire and wildfire fighting and post-wildfire recovery.	RDCK / EA-F FireSmart Coordinator	5 years	High priority critical infrastructure has had FireSmart vegetation management completed.	CRI FCFS funding up to $53,500 per municipal infrastructure (vegetation management included).

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
42	High	As part of fuel treatment implementation, RDCK/EA-F should develop interpretive signage to demonstrate pre- and post-fuel treatment forest stands conditions.	Interpretive signage could include text explaining the purpose of the fuel management treatment, connection to the CWRP, and FireSmart practices residents nearby can take to reduce wildfire hazards around their yards and homes.	RDCK / EA-F FireSmart Coordinator	5 years	Signage installed during implementation phases.	Eligible for UBCM CRI funding.
43	Moderate	Continue to support and promote the FireSmart Canada Neighbourhood Recognition Program to communities within EA-F. Identify community champions to spearhead organization for those communities not already organized, and support those communities that have been recognized in the past to continue working towards being so.	There are many small communities throughout EA-F that, by working together, could reduce their community-scale wildfire risk easily and substantially. The program supports a small-scale approach for neighbourhoods consisting of 5-50 homes, with the intent to implement achievable FireSmart goals	RDCK / EA-F FireSmart Coordinator	Ongoing	Increase in number of recognized communities.	FireSmart Canada $500; RDCK FireSmart Champion Grant up to $3000
44	Moderate	As part of the FireSmart Canada Neighbourhood Recognition Program (FCNRP), apply to CRI FCFS for funding to develop Neighbourhood FireSmart Plans.	To help guide FireSmart Canada Neighbourhood Recognition Program communities and their community champions to complete wildfire risk reduction measures.	RDCK / EA-F FireSmart Coordinator	In line with FCNRP Community program uptake.	Communities working towards FCNRP status have a Neighbourhood Plan	Eligible for UBCM CRI funding.



Map 15: Overview map of Proposed Treatment Units within EA-F's eastern WUI area.



PTU Name	Area (ha)	Priority
GROH-1	20.3	Moderate
SPRO-2	4.7	Moderate
SWPI942 (east polygons) & WILLS-2	16.4	High
SWPI942 (west polygons) & WILLS-3	8.6	High
SPRO-1	7.5	Low

Map 16: Overview map of Proposed Treatment Units within EA-F's western WUI area.

Table 26: Summary of Proposed Fuel Treatment Units (PTUs) for EA-F's WUI (ordered from east to west).

PTU Name	Nearest Community	Priority	Area (ha)	Overlapping Values / Treatment Constraints	Wildfire Behaviour Threat		Treatment Rationale
					Extreme & High	Moderate	
KOK-1B	Kokanee Campground	Low	2.1	Crown Provincial land. In Kokanee Creek Provincial Park. Entirely in UWR conditional harvest zone. Campsites.	0.0	2.1	*A larger portion of this PTU is in EA-E. It should all be treated as one polygon.* Treat to reduce wildfire threat within the campground and to protect the area from accidental fire starts related to campers. Treating this unit would also provide a demonstration project of FireSmart vegetation management to the community as well as visitors/tourists. Mature, C-5 type stand with patches of dense understory conifer regeneration. A mix of low to high crown base heights and moderate surface fuel loads. Treatment would likely include thinning of understory conifers, pruning of retained conifers, and surface fuel reduction. PTU SWPI 939 is uphill (north) from this unit. Treating all of these would create a more landscape-level area of reduced fire threat within the WUI. WTA KOKANEE-1 (Moderate; EA-F)
SWPI 939	Kokanee Provincial Park	High	8.4	Crown Provincial land. Existing CRI prescription, but not yet treated. In Kokanee Creek Provincial Park. Entirely in UWR conditional harvest zone and overlap with non-legal OGMA.	5.0	3.4	*A larger portion of this PTU is in EA-E. It should all be treated as one polygon.* Treat to reduce wildfire threat within the WUI and an area interface to structures. Treat to reduce fire ignition risk from hikers along the trails within. Treating this unit would also provide a demonstration project of FireSmart vegetation management to the community as well as visitors/tourists. Treating in conjunction with KOKANEE PTU would create a large area of reduced fire threat. Existing CRI prescribed unit, but not treated. The north and east portions of the TU are a young conifer regenerating stand (with some overstory L1 conifers) undergoing stem exclusion and self pruning. Little surface fuel currently, but high horizontal and vertical continuity. The south and east portions of the TU are a more open, mature conifer stand with higher amounts of surface fuels. PTU is anchored to the highway to the south and C5/C7 low risk fuel types to E and W. Prescribed burning following thinning and pruning is likely practicable. It is uphill from large campsite with a lot of people during fire season. WTA KP-1 (Moderate); REDFISH-1 (Low; EA-F)
LYONS-1	Nasookin (Northshore)	Low	11.6	Crown Provincial land. Entirely in UWR conditional harvest zone. Northwest corner overlaps the Foster Community Watershed. South edge is adjacent to,	11.1	0.0	Treat to create a landscape-level fuel break in the interface that runs perpendicular to the dominant fire season wind direction. This linear PTU is located on the steep slopes of north shore communities, just south of Nasookin. There is an old, somewhat overgrown 10m wide strip going from the

PTU Name	Nearest Community	Priority	Area (ha)	Overlapping Values / Treatment Constraints	Wildfire Behaviour Threat		Treatment Rationale
					Extreme & High	Moderate	
				but does not touch, private property. Steep slopes.			highway straight upslope to the top of the slope break. This feature creates a unique opportunity whereby extending the fuel free or fuel-reduced zone to 30m on either side would create a fuel break, allowing for safer access by wildland firefighters and a strategic location for dropping retardant. Treatment should focus on removing understory conifers, pruning retained conifers, and surface fuel reduction.
GROH-1	Grohman Creek	Moderate	20.3	Entirely in UWR conditional harvest zone. Borders private property on its east and south sides.	9.3	11.0	Treat to reduce wildfire threat in the WUI and interface to homes/structures. PTU proposed in the Nelson CWDP, this unit is strategically located on the leading fire season wind side of the Grohman valley and associated community. Possibly a historic salvage harvested block that has resulted in a relatively dense mix-wood understory, low crown base heights of L1/L2 dominant conifers, and tall intermediate stems contribute to the wildfire hazard. Treatment should focus on thin from below of understory conifers, pruning of retained conifers, and a minor amounts of surface fuel reduction. WTA GOHMAN-1 (Moderate)
SPRO-2	Taghum	Moderate	4.7	Entirely in UWR conditional harvest zone. Borders private property on all sides except the northwest portion.	0.5	4.0	Treat to reduce wildfire threat in the WUI located within a dense community and to protect an important access/egress route. Treating this unit would also demonstrate to the public FireSmart vegetation management practices they can use on their properties. Hazardous open C5-type stand with low lying and wide spreading dead ladder branches with lichen. Treatment would increase the vertical fuel strata gap via pruning L1 stems. This PTU would require low effort and cost. WTA SPROULE-2 (Moderate)
SWPI942 (east polygons) & WILLS-2	Sproule Creek	High	16.4	Entirely in UWR conditional harvest zone. Borders private property on all sides, except the southeast portion. Community walking trails within. Some steep slopes.	15.9	0.5	*SWPI-942: Existing CRI Prescription - not treated.* Treat to reduce extreme wildfire treat within the Sproule Creek upper valley community. Hazardous young forest C-3-type stand with very dense pockets. Treatment should focus on surface fuel removal, thinning suppressed understory stems, and pruning L1/L2 stems to increase the fuel strata gap and decrease the high crown closure. Treat in conjunction with additional SWPI-942 polygons and WILLS-3 PTU on the west side of Sproule Creek Road to create a landscape-like fuel break across the lower valley directly interface to the community. WTA WILLS-1 (High); WILLS-2 (High)

PTU Name	Nearest Community	Priority	Area (ha)	Overlapping Values / Treatment Constraints	Wildfire Behaviour Threat		Treatment Rationale
					Extreme & High	Moderate	
SWPI942 (West polygons) & WILLS-3	Sproule Creek	High	8.6	Entirely in UWR conditional harvest zone. Borders private property on north and northeast sides. Community walking trails within.	8.6	-	*SWPI-942: Existing CRI Prescription - not treated.* Treat to reduce extreme wildfire treat within the Sproule Creek upper valley community. Hazardous young forest C-3-type stand with very dense pockets. Treatment should focus on surface fuel removal, thinning suppressed understory stems, and pruning L1/L2 stems to increase the fuel strata gap and decrease the high crown closure. Treat in conjunction with additional SWPI-942 polygons and WILLS-3 PTU on the east side of Sproule Creek Road to create a landscape-like fuel break across the lower valley directly interface to the community. WTA WILLS-3 (High)
SPRO-1	Sproule Creek	Low	7.5	Overlap with Woodlot 1670. Entirely in UWR conditional harvest zone.	7.5	-	Treat to reduce wildfire threat within the WUI. In conjunction with SWPI-942, WILLS-2, and WILLS-3 PTUs, treating this would extend the interface area of reduced wildfire threat for both Sproule Creek and Taghum communities. Additionally, the Sproule Creek FSR has had buffering fuel treatments completed for a significant portion west of this unit. This would extend those efforts further across the WUI. M-1/2 fuel type due to larch in the overstory. Quite dense, western red cedar dominated stand with very low crown base heights. Low ladder fuel horizontal continuity, but high general canopy horizontal continuity. Consistent moderate fine surface fuels. Treatment should focus on understory thinning, pruning of retained conifers, and surface fuel reduction. WTA SPROULE-1 (Moderate)

SECTION 6: APPENDICES

6.1 APPENDIX A: REVIEW OF 2016 CWPP RECOMMENDATIONS

The 2016 CWPP Recommendations were reviewed and commented on by the Local Government. Comments were edited for clarity.

Item	2015 CWPP Recommendation	2022 CWRP *Follow-Up Discussion*
Communication and Education		
Objective: To improve public understanding of fire risk and personal responsibility by increasing resident awareness of the wildfire threat in their community and to establish a sense of homeowner responsibility.		
1.	Establish a school education program to engage youth in wildfire management. Consult ABCFP and BCWS (the zone) to facilitate and recruit volunteer teachers and experts to help with curriculum development to be delivered in elementary and/or secondary schools. Educational programming can be done in conjunction with any currently running fire prevention education programs.	***Yes. Some education has happened (although more is needed).*** ***It is being done by the school, but not under the authority of RDCK.***
2.	Make summaries of this report and associated maps publicly available through webpage, social media, and public FireSmart meetings. Add fire threat spatial data to the interactive web-mapping tool to allow residents to find their property and the associated threat of wildfire.	***CWRP is available on RDCK website.***
3.	Add a Wildfire-specific Fire Prevention Week (or day) in the spring, immediately prior to the fire season.	***Yes, numerous FCNRP events happen throughout 2023.***
4.	Consider door to door FireSmart assessment (and/or home owner self assessment) within the Area F interface in order to educate residents and to quantify the level the level of risk in the interface	***Yes, 179 HPP assessments completed so far in area F. [as of September 2023]***
Objective: To enhance the awareness of elected officials and stakeholders regarding the resources required to reduce fire risk.		

5.	Maintain and strengthen the regional Interface Working Group that includes Nelson, Area E and BC Parks to coordinate wildfire risk reduction efforts.	***Nelson CFRC meets numerous times per season to coordinate efforts within parts of area F.***
6.	Consider local planning departments to develop regional development permit standards, provide a group voice to the Building and Safety Standards Branch and other provincial entities, and align municipal bylaws.	***No communications I am aware of.***
7.	Consider the development of a coordinated approach to fuel management and hazard reduction within and adjacent to the Area F Study Area by coordinating with stakeholders including forest licensees, Ministry of Transportation and Infrastructure and utility companies to aid in the establishment of large, landscape-level fuel breaks or compliment current or proposed fuel treatment areas.	***Nelson CFRC includes Parks, CL WRR, RDCK, and BCWS who all collaborate on various fuel management projects.***
8.	Maintain regular communication with the Technical Review Committee (see Section 2.4) to ensure that proposed activities maintain or enhance biodiversity values.	***[no comment]***
Structure Protection and Planning		
Objective: Enhance protection of critical infrastructure from wildfire.		
9.	Complete a fire flow / water vulnerability assessment for each water system and identify and map all alternative water sources (reservoirs, streams, lakes, etc.). Identify which areas may have insufficient or unreliable water supplies and provide recommendations to reduce Area F's vulnerability.	***[no comment]***
10.	Complete a vulnerability assessment of all critical infrastructure including water infrastructure in interface areas with FireSmart recommendations.	***Firehalls complete. Water/power unknown.***
11.	Develop alternative, backup water sources for fire protection, including the establishment of standpipes as required.	***[no comment]***
12.	Complete a detailed review of back-up power source options for all critical infrastructure and upgrade as required.	***[no comment]***

13.	Consider completing more detailed hazard assessments and developing response plans for stabilization and rehabilitation of burn areas in watersheds that are vulnerable to post-wildfire debris flows and floods. Opportunities may exist to coordinate study and planning with adjacent jurisdictions (BC Parks).	***[no comment]***
Objective: Encourage private homeowners to voluntarily adopt FireSmart principles on their properties.		
14.	Complete, or support homeowners to complete, WUI Site and Structure Hazard Assessments for interface homes, make hazard mapping for assessed homes publicly available, and provide informational material to homeowners on specific steps that they can take to reduce fire hazard on their property.	***Yes, 179 HPP assessments completed so far in area F. [As of September 2023]***
Municipal Policy		
Objective: To reduce wildfire hazard on private land and increase FireSmart compliance.		
15.	Complete OCP review to strengthen and expand reach of the existing policy.	***[no comment]***
16.	Consider developing Wildfire Hazard Development Permit (DP) Areas for major retrofits / renovations or new builds (building permits), collecting bonds to be returned upon evidence of completing development and landscaping according to wildfire hazard assessment. Review District of North Vancouver DP process as a model.	***Nothing implemented yet, wildfire development permit area study completed in 2022***
17.	Obtain legal advice regarding the Building Act, specifically regarding the temporarily unrestricted matters and local government authority to set exterior building materials requirements. Use local government authority to mandate FireSmart construction materials beyond BC Building Code in wildfire hazard development permit area, as allowed.	***[no comment]***
18.	Develop a landscaping standard to be applied in interface / DP areas. The standard should list flammable non-compliant vegetation, non-flammable drought and pest resistant alternatives, and tips on landscape design to reduce maintenance, watering requirements, and reduce wildfire hazard. Include meeting landscaping standard as a requirement of Development Permit.	***Not complete***

19.	Proactively enforce wildfire covenants requiring owners to maintain their properties hazard free on all properties in Development Permit areas. Enforcement will serve to minimize fuel risks on problematic private properties which have allowed hazardous accumulation of fuels and provide improved protection to adjacent lands.	***Not complete***
20.	Alter the zoning bylaws to require that developers leave building set backs on private land so that there is a minimum of 10 m distance between buildings and forest interface.	***Not complete***
21.	Consider developing an outdoor burning bylaw specifying requirements for and limitations to outdoor burning and, in conjunction with the Fire Chief, implement the bylaw at times of high fire danger when provincial bans are not in place. The bylaw should consider effective and efficient enforcement measures and powers.	***Not complete***
22.	Work with the Building and Safety Standards Branch to provide input into the Building Code revisions that would apply within the development permit areas to prevent the spread of wildfire.	***Not complete***
Emergency Response and Planning		
Objective: To improve structural and wildfire equipment and training available to RDCK Fire and Rescue.		
23.	Conduct annual structural and interface training with MFLNRO BCWS. As part of the training, it is recommended to conduct annual reviews to ensure PPE and wildland equipment resources are complete, in working order, and the crews are well-versed in their set-up and use. Interface training should include completion of a mock wildfire simulation in coordination with BCWS and safety training specific to wildland fire and risks inherent with natural areas.	***[no comment]***
24.	Integrate Emergency Preparedness Committee and West Arm Interface Steering Committee. Coordination and information sharing are crucial to the development of a community well prepared for wildfire. As an outcome of this integration, consider updating the Emergency Program Structure.	***[no comment]***
25.	Provide S215 training to all/some members of Fire Halls in Area F to enhance wildfire suppression training. Consider investigating Office of the Fire Commissioner funding.	***[no comment]***

26.	Review UBCM-owned SPU request procedure. Complete training with SPU as required and assess needs based on training outcomes.	***[no comment]***
27.	Develop Regional Service to fund additional SPUs and maintain existing SPUs.	***[no comment]***
28.	Explore opportunities to collaborate with BCWS to coordinate discount volumes of hose for interface fires, reducing costs and logistics to local fire departments.	***[no comment]***
29.	Explore opportunities to ensure a duty officer is in place in each Fire Protection Area to provide coverage for periods of high or extreme hazard.	***[no comment]***
30.	Conduct fire preplan assessment for key interface areas in Area F. Other jurisdictions have completed assessments that prioritize fire department-specific variables, such as distance to hydrants, response time from nearest fire station, etc. to produce local risk ratings.	***[no comment]***
Emergency Response Evacuation and Access		
Objective: To improve access and egress to neighbourhoods at risk and natural areas within RDCK.		
31.	Develop a Total Access Plan to create, map and inventory trail and road network in natural areas for suppression planning, identification of areas with insufficient access and to aid in strategic planning. Fire threat mapping from this CWPP should be included. The plan should be updated every five years, or more regularly, as needed to incorporate additions or changes.	***[no comment]***
32.	Require that all new interface developments have access for evacuation and sufficient capacity for emergency vehicles.	***[no comment]***
33.	Facilitate completion of emergency evacuation plans for interface neighbourhoods with limited access.	***[no comment]***
Fuel Management		
Objective: Reduce wildfire threat on public lands through fuel management.		

34.	Proceed with detailed assessment, prescription development and treatment of hazardous fuel units identified in this CWPP. Collaborate with Kalesnikoff, BCTS, and other licensees, BC Parks and City of Nelson to facilitate larger projects.	***[no comment; some prescriptions have been developed, and some of those implemented.***
35.	Prioritize Areas of Interest across Electoral Areas with updated CWPPs to ensure effective and objective treatment.	***[no comment; some prescriptions have been developed, and some of those implemented.***
36.	Proceed with treatment of shovel-ready and funded hazardous fuel units identified in the 2008 CWPP.	***[no comment; some prescriptions have been developed, and some of those implemented.***
Objective: Maintain treated areas under an acceptable level of wildfire fire threat (moderate).		
37.	As treatments are implemented, complete monitoring within 10 years of treatment (subject to site conditions) and maintenance every 15-20 years (subject to prescription and site conditions) on previously treated areas. Treated areas should be assessed by a Registered Professional Forester, specific to actions required in order to maintain treated areas in a moderate or lower hazard.	***[no comment]***

6.2 APPENDIX B: LOCAL WILDFIRE RISK PROCESS

Wildfire Risk Assessment plot worksheets are provided in Appendix C: Wildfire Risk Assessment – Worksheets and Photos, plot locations are summarized in Appendix B-2: , and the field data collection and spatial analysis methodology is detailed in Appendix B-2 and B-3.

6.2.1 APPENDIX B-1: FUEL TYPING METHODOLOGY AND LIMITATIONS

The Canadian Forest Fire Behaviour Prediction (FBP) System outlines five major fuel groups and sixteen fuel types based on characteristic fire behaviour under defined conditions.[65] Fuel typing is recognized as a blend of art and science. Although a subjective process, the most appropriate fuel type was assigned based on research, experience, and practical knowledge; this system has been used within BC, with continual improvement and refinement, for 20 years.[66] It should be noted that there are significant limitations with the fuel typing system which should be recognized. Major limitations include: a fuel typing system designed to describe fuels which sometimes do not occur within the WUI, fuel types which cannot accurately capture the natural variability within a polygon, and limitations in the data used to create initial fuel types.[66] There are several implications of these limitations, which include: fuel typing further from the developed areas of the study has a lower confidence, generally; and, fuel typing should be used as a starting point for more detailed assessments and as an indicator of overall wildfire risk, not as an operational, or site-level, assessment. Forested ecosystems are dynamic and change over time: fuels accumulate, stands fill in with regeneration, and forest health outbreaks occur. Regular monitoring of fuel types and wildfire risk assessment should occur every 5 – 10 years to determine the need for threat assessment updates and the timing for their implementation.

Table 27 summarizes the fuel types observed in EA-F's WUI by general fire behaviour (crown fire and spotting potential). These fuel types were used to guide the threat assessment.

Table 27. Fuel Type Categories and Crown Fire Spot Potential encountered within the WUI.

Fuel Type	FBP / CFDDRS Description	*WUI Description*	Wildfire Behaviour Under High Wildfire Danger Level	Fuel Type – Crown Fire / Spotting Potential
C-3	Mature Jack or Lodgepole Pine	*Pole-sapling to mature even-aged conifer-dominated forest with moderate to high density and high crown closure (near or at horizontal continuity). Crows separated from the forest floor in mature stands.*	Surface and crown fire, low to very high fire intensity and rate of spread.	High

[65] Forestry Canada Fire Danger Group. 1992. Development and Structure of the Canadian Forest Fire Behavior Prediction System: Information Report ST-X-3.
[66] Perrakis, D.B., Eade G., and Hicks, D. 2018. Natural Resources Canada. Canadian Forest Service. *British Columbia Wildfire Fuel Typing and Fuel Type Layer Description* 2018 Version.

Fuel Type	FBP / CFDDRS Description	*WUI Description*	Wildfire Behaviour Under High Wildfire Danger Level	Fuel Type – Crown Fire / Spotting Potential
C-5	Red and White Pine	*Low to moderate density, uneven-aged conifer-dominated forest, crown base heights mixed. Understory of discontinuous natural conifer ingress in openings and gaps, deciduous shrubs, and herbs.*	Moderate potential for active crown fire in wind-driven conditions. Under drought conditions, fuel consumption and fire intensity can be higher due to dead woody fuels.	Moderate
C-7	Ponderosa pine and Douglas-fir	*Low-density, uneven-aged conifer-dominated forest, crowns separated from the ground, understory of discontinuous grasses and shrubs. Exposed bed rock and low surface fuel loading.*	Surface fire spread, torching of individual trees, rarely crowning (usually limited to slopes > 30%), moderate to high intensity and rate of spread.	Moderate
O-1a/b	Grass	*Matted and standing grass that can cure; sparse or scattered shrubs, trees, and down woody debris. Cutblocks >2 seasons old that do not meet S-type descriptions, as well as young regenerating cutblocks that have not reached any horizontal continuity.*	Rapidly spreading, high-intensity surface fire when cured.	Low
M-1/2	Boreal mixedwood (leafless and green)	*Moderately well-stocked mixed stands of conifers and deciduous species, low to moderate dead, down woody fuels.*	Surface fire spread, torching of individual trees and intermittent crowning, (depending on slope and percent conifer).	<26% conifer (Very Low); 26-49% Conifer (Low); >50% Conifer (Moderate)
D-1/2	Aspen or birch (leafless and green)	*Deciduous stands.*	Always a surface fire, low to moderate rate of spread and fire intensity.	Low
S-1	Slash (jack / lodgepole pine, white spruce)	*Any conifer slash as the result of harvesting practices.*	Moderate to high rate of spread and high to very high intensity surface fire.	Low
N	N/A	*Non-fuel: irrigated/mowed agricultural fields, urban or developed areas void or nearly void of vegetation and forests.*	N/A	N/A
W	N/A	*Water*	N/A	N/A

6.2.2 APPENDIX B-2: WILDFIRE THREAT ASSESSMENT PLOTS

Table 28 displays a summary of all Wildfire Threat Assessment (WTA) plots completed during CWRP field work. The most recent 2020 WTA threat plot worksheets and methodology were used.[67] The plot forms and photos will be submitted as a separate document. The following ratings are applied to applicable point ranges:

- Wildfire Behaviour Threat Score (Southern Interior Mountains)
  - 0 – 47 Low
  - 48 – 65 Moderate
  - 66 – 79 High
  - 80 + Extreme

Table 28. Summary of WUI Threat Assessment Worksheets (2020).

WTA Plot	Geographic Location	Wildfire Threat Rating
6 MILE-1	Adjacent to Six Mile rd.	59 (Moderate)
BEAR-1	North of Nelson newly Hwy	46 (Low)
BONN-1	Near junction between Park view Dr. and Brown Rd.	39 (Low)
GOHMAN-1	Grohman Forest Service Road	48 (Moderate)
KEIRAN-1	Adjacent to Keiran Rd on rocky south facing slope	49 (Moderate)
KOKANEE-1	Kokanee Creek Provincial Park Campground	53 (Moderate)
REDFISH-1	Near Redfish Campground north of Hwy 3A	44 (Low)
SPROULE-1	North of Taghum	60 (moderate)
SPROULE-2	North of Taghum between Sproule Creek Rd. and Hutchins Rd.	48 (Moderate)
WILLS-1	North of Taghum adjacent to Wills Rd EA F	69 (High)
WILLS-2	North of Taghum south of Wills Rd	67 (High)
WILLS-3	North of Taghum adjacent to junction between Sproule Rd and Wills Rd	74 (High)

[67] MFLNRORD.2020 Wildfire Threat Assessment Guide and Worksheets

6.2.3 APPENDIX B-3: FIRE RISK THREAT ASSESSMENT METHODOLOGY

As part of the CWRP process, spatial data submissions are required to meet the defined standards in the Program and Application Guide. Proponents completing a CWRP can obtain open-source BC Wildfire datasets, including Provincial Strategic Threat Analysis (PSTA) datasets from the British Columbia Data Catalogue. Wildfire spatial datasets obtained through the BC Open Data Catalogue used in the development of the CWRP include, but are not limited to:

- PSTA Spotting Impact
- PSTA Fire Density
- PSTA Fire Threat Rating
- PSTA Lighting Fire Density
- PSTA Human Fire Density
- Head Fire Intensity
- WUI Human Interface Buffer (1436m buffer from structure point data)
- Wildland Urban Interface Risk Class
- Current Fire Polygons
- Current Fire Locations
- Historical Fire Perimeters
- Historical Fire Incident Locations
- Historical Fire Burn Severity

As part of the program, proponents completing a CWRP are provided with a supplementary PSTA dataset from BC Wildfire Services. This dataset includes:

- Fuel Type
- Structures
- Structure Density
- Eligible WUI (1 km buffer of structure density classes >6).

The required components for the spatial data submission are detailed in the Program and Application Guide Spatial Appendix – these include:

- AOI
- Proposed Treatment
- WUI (1 km buffer of structure density classes >6)

The provided PSTA data does not transfer directly into the geodatabase for submission, and several PSTA feature classes require extensive updating or correction. In addition, the Fire Threat determined in the PSTA is fundamentally different than the localized Fire Threat feature class that is included in the Local Fire Risk map required for project submission. The Fire Threat in the PSTA is based on provincial scale inputs - fire density; spotting impact; and head fire intensity, while the spatial submission Fire Threat is based on the components of the Wildland Urban Interface Threat Assessment Worksheet. For the scope of this project, completion of WUI Threat Assessment plots on the entire AOI is not possible, and therefore

an analytical model has been built to assume Fire Threat based on spatially explicit variables that correspond to the WUI Threat Assessment worksheet.

Field Data Collection

The primary goals of field data collection are to confirm or correct the provincial fuel type, complete WUI Threat Assessment Plots, and assess other features of interest to the development of the CWRP. This is accomplished by traversing as much of the AOI and surrounding Eligible WUI as possible (within time, budget and access constraints). Threat Assessment plots are completed on the 2020 form, and as per the Wildland Urban Interface Threat Assessment Guide.

For clarity, the final threat ratings for the AOI were determined through the completion of the following methodological steps:

1. Update fuel-typing using orthophotography provided by the client and field verification.
2. Update structural data using critical infrastructure information provided by the client, field visits to confirm structure additions or deletions, BC Assessment, and orthophotography
3. Complete field work to ground-truth fuel typing and threat ratings (completed 8 WUI threat plots on a variety of fuel types, aspects, and slopes and an additional 250 field stops with qualitative notes, fuel type verification, and/or photographs)
4. Threat assessment analysis using field data collected and rating results of WUI threat plots – see next section.

Spatial Analysis

The field data is used to correct the fuel type polygon attributes provided in the PSTA. This corrected fuel type layer is then used as part of the spatial analysis process. The other components are developed using spatial data (BEC zone, fire history zone) or spatial analysis (aspect, slope). A scoring system was developed to categorize resultant polygons as having relatively low, moderate, high or extreme Fire Threat, or Low, Moderate, High or Extreme WUI Threat. Table 29 below summarizes the components and scores to determine the Fire Behaviour Threat.

Table 29: Components of Fire Threat Analysis

Attribute	Indicator	Score
Fuel Type	C-1	35
	C-2	
	C-3	
	C-4	
	M-3/4,>50% dead fir	
	C-6	25
	M-1/2, >75% conifer	20
	C-7	
	M-3/4, <50% dead fir	
	M-1/2, 50-75% conifer	15
	M-1/2, 25-50% conifer	10
	C-5	
	O-1a/b	
	S-1	

	S-2	
	S-3	
	M-1/2, <25% conifer	5
	D-1/2	0
	W	0
	N	0
Weather - BEC Zone	AT, irrigated	1
	CWH, CDF, MH	3
	ICH, SBS, ESSF	7
	IDF, MS, SBPS, CWHsds1 & ds2, BWBS, SWB	10
	PP, BG	15
Historical Fire Occurrence 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	15
Slope	<16	1
	16-29 (max N slopes)	5
	30-44	10
	45-54	12
	>55	15
Aspect (>15% slope)	North	0
	East	5
	<16% slope, all aspect	10
	West	12
	South	15

WUI Risk Classes and their associated summed scores

Very Low	0
Low	0-35
Moderate	35-55
High	55-65
Extreme	>65

These attributes are summed to produce polygons with a final WUI Risk Score. To determine the Fire Threat score, only the distance to structures is used. Buffer distance classes are determined; <200m, 200m-500m and >500m) but only for polygons that had a 'high' or 'extreme' Fire Threat score from previous assessment. In order to determine WUI Risk; those aforementioned polygons within 200m are rated as 'extreme', within 500m are rated as 'high', within 2km are 'moderate', and distances over that are rated 'low'.

Limitations

There are obvious limitations in this method, most notably that not all components of the threat assessment worksheet are scalable to a GIS model, generalizing the Fire Behaviour Threat score. The WUI Risk Score is greatly simplified, as determining the position of structures on a slope, the type of development and the relative position are difficult in an automated GIS process. Structures are considered, but there is no consideration for structure type (also not included on threat assessment worksheet). This method uses the best available information to produce accurate and useable threat assessment across the study area in a format which is required by the UBCM FCFS program.

6.2.4 APPENDIX B-4: PROXIMITY OF FUEL TO THE COMMUNITY

Home and Critical Infrastructure Ignition Zones

Multiple studies have shown that the principal factors regarding home and structure loss to wildfire are the structure's characteristics and immediate surroundings. The area that determines the ignition potential of a structure to wildfire is referred to as (for residences) the Home Ignition Zone (HIZ) or (for critical infrastructure) the Critical Infrastructure Ignition Zone (CIIZ).[68,69] Both the HIZ and CIIZ include the structure itself and three concentric, progressively wider Priority Zones out to 30 m from the structure (Figure 15 below). More details on priority zones can be found in the FireSmart Manual.[70]

[68] Reinhardt, E., R. Keane, D. Calkin, J. Cohen. 2008. Objectives and considerations for wildland fuel treatment in forested ecosystems of the interior western United States. Forest Ecology and Management 256:1997 - 2006.
[69] Cohen, J. Preventing Disaster Home Ignitability in the Wildland-urban Interface. Journal of Forestry. p 15 - 21.
[70] https://firesmartcanada.ca/ and https://www2.gov.bc.ca/gov/content/safety/wildfire-status/prevention/firesmart

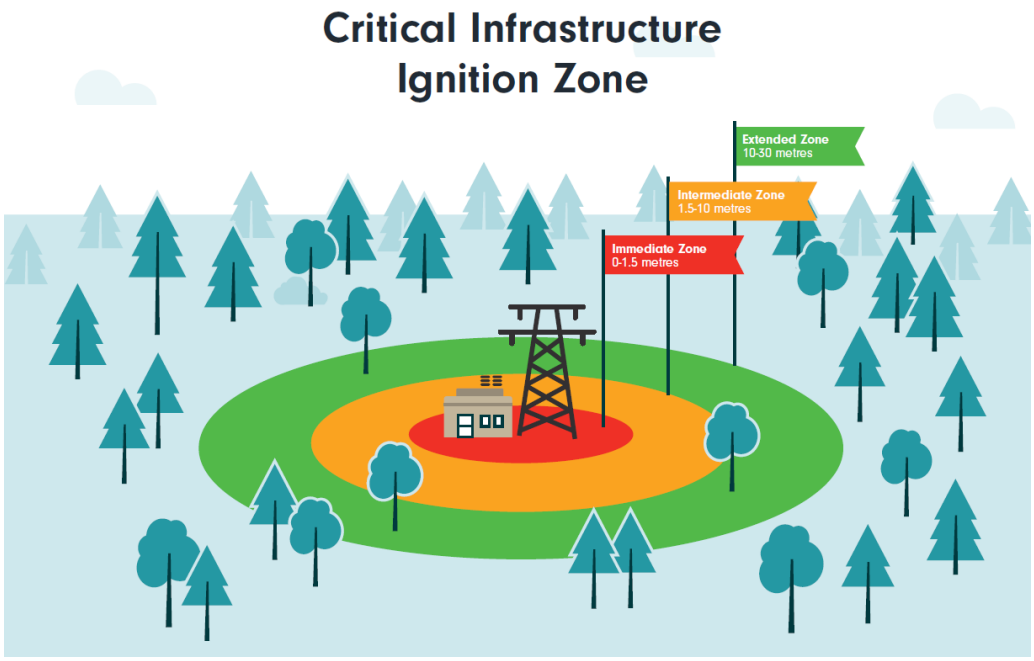


Figure 15: FireSmart Home and Critical Infrastructure Ignition Zone (HIZ, CIIZ)

It has been found that during extreme wildfire events, most home destruction has been a result of low-intensity surface fire flame exposures, usually ignited by embers (firebrands). Firebrands can be transported long distances ahead of the wildfire, across fire guards and fuel breaks, and accumulate within the HIZ/CIIZ in densities that can exceed 600 embers per square meter. Combustible materials found within the HIZ/CIIZ combine to provide fire pathways allowing spot surface fires ignited by embers to spread and carry flames or smoldering fire into contact with structures.

6.3 APPENDIX C: WILDFIRE RISK ASSESSMENT – WORKSHEETS AND PHOTOS

Provided separately as PDF package.

6.4 APPENDIX D: MAPS

Provided separately as PDF package.