Forest Practices Board

Managing Forest Fuels in the Wildland Urban Interface

Special Investigation

FPB/SIR/28

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Executive Summary

Fifteen years ago, "wildland-urban interface," or WUI, was not a familiar term to most British Columbians. But after several severe wildfire seasons, people are more aware of the threat that wildfire poses to communities surrounded by forest.

After the Firestorm Provincial Review report came out in 2004, government introduced a fuel management program to address increasing fire risks in communities. Under this program, local governments take the lead in planning and executing fuel management treatments, with support from the provincial government.

Wildland Urban Interface (WUI) -
An area where human development meets or is intermingled with forest and grassland fuel types.

Fuel management refers to changing the structure and composition of a forest to reduce the fuel available to burn in a wildfire. Fuel management should result in less intense wildfires, greater public and firefighter safety, and faster recovery for forests.

In 2009, the Board set out to examine the progress made so far in the fuel management program and, most importantly, to talk to those involved. This report highlights communities that have risen to the fuel management challenge and passes along the lessons these communities have learned. The Board hopes this report will encourage more communities to consider implementing fuel management, and to improve the effectiveness of the fuel management projects that are undertaken.

Between May and July 2009, Board staff visited approximately 50 fuel management projects throughout BC, meeting with fuel management specialists, local government officials and consultants to discuss their experiences. The Board heard a number of common issues from those trying to manage forest fuels around their communities.

Common concerns include:

- Jurisdictional responsibility for treating Crown land surrounding affected communities.
- Many communities lack funding and capacity to carry out the work.
- The issue of liability if a community identifies fire risk but doesn't treat it, or if they treat it and a fire happens anyway.
- Reluctance to act because public interest wanes shortly after a bad fire season ends, and because fuel treatment can raise many public issues and concerns.
- Lack of expertise for planning and carrying out this type of work.

But, despite these concerns, the investigation found examples of communities of all sizes that have managed to work through these issues and make good progress. The Board also identified some valuable lessons learned from their experiences, including:

- A community wildfire protection plan (CWPP) is an important tool to ensure work is directed at priority sites first.
- A prescription is essential to ensure other values are identified and addressed.
- Communication and coordination between various land owners and managers is important so one doesn't "undo" the work of another.
- Debris management needs to be carefully considered.
- Stocking standards (a requirement to replant trees after harvesting) conflict with the intent of fuel reduction, and current exemptions are not always applied.
- Merchantable timber (getting fair value for the removed trees) is an issue the provincial government needs to address.

Overall, the Board found that communities and others involved in fuel management should be commended. They have done something important for the safety of their communities and learned how to deliver the program, despite the challenges and perceptions identified in this report. They have also gained valuable experience and can offer helpful advice to other communities.

Fuel management is a huge and urgent task and obviously more must be done. To support that effort, this report offers tips for local governments, consultants and private landowners contemplating or involved in fuel management.

Finally, the Board makes recommendations about discouraging the creation of more interface area without considering mitigation, making it easier for local governments to manage fuels, and the development of best management practices for debris disposal.

Board Commentary

Years of very successful fire suppression, dry weather, insect infestations, and increasing and uncoordinated development across the forested landscape have combined to create ideal conditions for catastrophic wildfires affecting tens of thousands of people. Addressing this situation is a matter of considerable urgency because what may have seemed like an extraordinary fire season in the past may become the new norm as the consequences of climate change accumulate. In particular, many remote First Nations are at risk, as they are embedded in the forest and may have poor access to and from their communities.

Since the devastating fire season of 2003, 84 local governments have prepared community wildfire protection plans and some have treated fuels in and around their communities. But there are still many communities that have not taken steps to protect themselves.

The task at hand is huge — 685,000 hectares in BC are considered at high risk of an interface fire. To date, about 35,000 hectares have been treated. Funding is still available under the joint provincial government-UBCM program, but more will be needed to address this problem on a provincial scale. Complicating matters is the fact that fuel management treatments need to be repeated over time as vegetation grows back.

The learning curve is also steep — fuel management in BC is new to most people, and even those with experience are challenged to work effectively in diverse ecological conditions.

But often, those being called upon to lead the program within their communities have many other responsibilities and don't have a background in forest management. Despite these and other challenges discussed in this report, communities of all sizes are working within the program and successfully getting the job done. As can be expected with such a large undertaking, there have been issues, but lessons have been learned that can now be widely shared.

This investigation set out to examine the progress made so far in the fuel management program and to talk to those who have engaged in the process to date. It is the Board's hope that by highlighting communities that have risen to the fuel management challenge and by passing along the lessons they have learned, it might encourage more communities to consider fuel management as an urgent priority.

The Board thanks those communities and individuals that took the time to show us their projects and tell us about their experiences. We commend them for successfully navigating what can be, at times, a difficult road.

For those communities that have not yet come around, do not underestimate the gravity of the situation. It is critical for local leaders to meet this challenge, and the Board strongly encourages communities to move forward to protect residents and infrastructure. The time to act is now.

Recommendations

The Board believes that fuel management should be an urgent priority for communities at risk of wildland-urban interface fires. Accordingly, the Board is making the following recommendations:

Local Governments

1. Local governments should consider fuel hazard and wildfire risk and should require mitigation measures before approving new development in interface areas.

2. Local governments should take advantage of the fuel management program, build on the experience of others described in this report and manage the hazardous fuels in and around their community.

Provincial Government

3. The provincial government should make fuel management easier for communities. Possible actions include:
    - Setting provincial stocking standards for interface areas so that local governments do not have to negotiate them individually with MFR district managers.
    - Establishing interface areas where public safety is the first priority.
    - Addressing administrative issues regarding stumpage, appraisal, and international trade to remove them as barriers to local governments taking action.
    - Addressing the need for funding to sustain the program over the long-term.
    - Fostering, encouraging and supporting innovation; local communities may have suggestions for addressing fuel management issues such as liability, jurisdiction and sustainable funding.

4. The provincial government should lead the development of best management practices for the management of debris from fuel treatments.

Introduction

Fifteen years ago, "wildland-urban Interface," or WUI, was not a familiar term to most British Columbians. But after the 1998 and 2003 wildfire seasons, people began to appreciate the threat that fire poses to communities surrounded by forest.

Years of very successful fire suppression, dry weather, insect infestations and increasing development in and around forested areas have combined to create ideal conditions for catastrophic wildfires that could affect tens of thousands of people. BC's Auditor General, the Firestorm 2003 Provincial Review (the Filmon Report[1]), and the Forest Practices Board have all made recommendations about the fire risk in interface areas, including the management of forest fuels.

Part of the provincial government's response to these recommendations was to set up a fuel management program in partnership with the Union of BC Municipalities (UBCM). Through this program, many communities and local governments have prepared community wildfire protection plans (CWPPs) and several have treated hazardous forest fuels.

According to government figures, approximately 35,000 hectares of land have been treated to reduce the risk of wildfire to communities. After the 2009 fire season, it is likely that interest in fuel management will continue to grow, and more projects will be planned and completed.

The Board initiated this special report to assess progress made to date under the fuel management program, to identify barriers to success and to review fuel management activities on the ground.

Further, by highlighting some of the projects successfully completed by local governments, the Board hopes to encourage other communities to consider participating in the fuel management program.

The Process

In early 2009, the Board interviewed government staff involved in fuel management to gain an understanding of the fuel management program, the participants and the issues that they face. Between May and July 2009, Board staff visited approximately 50 fuel management projects throughout BC, meeting with fuel management specialists, local government officials and consultants during these site visits, and discussing their experiences.

Appendix 1 lists the sites visited, a description of the fuel reduction treatment, and a link that shows project location and photos for Google Earth users.

[1] Available at http://www.2003firestorm.gov.bc.ca/

Background

What is Fuel Management?

Fuel management means changing the structure and composition of a forest to reduce the fuel available to burn in a wildfire. Fuel management should result in less intense wildfires, and that means greater public and firefighter safety and faster recovery for forests. Fuel management cannot eliminate wildfires, but it can reduce the probability of intense wildfires and in many cases make it easier to suppress wildfires.

An untreated stand in Pemberton.

Common fuel management practices include thinning, pruning, cleaning up debris from the forest floor and creating fuel breaks. Planned fire, or prescribed burning, is the traditional tool of fuel management; it can be inexpensive, effective and environmentally appropriate. But concerns about smoke, escaping fires, lack of burning expertise and local bylaws have severely limited the use of planned fire in recent years, particularly in WUI areas.

Previous Reports

In 2001, the Auditor General of BC released a report, *Managing Interface Fire Risks*, which assessed the preparedness of government for major interface fires. The report recommended that the provincial government:

- encourage organized areas of the province to assess interface fire risks in their communities
- complete hazard mapping of unorganized areas of the province over a reasonable time period, with emphasis on high and moderate risk areas
- encourage high and moderate risk communities to take practical steps to mitigate interface fire risks

A treated stand in Pemberton. Large stems were pruned, the understory was removed and debris was piled and burned.

After a devastating fire season in 2003, the Firestorm 2003 Provincial Review, led by the Honourable Gary Filmon, released a report (Filmon, 2004) recommending that the provincial government:

- lead the development of a strategic plan in cooperation with local governments to improve fire prevention in the interface through fuel management
- undertake a series of fuel treatment pilot projects in cooperation with municipal and regional governments in locations of high interface fire risk to demonstrate and prove the social, economic, and ecological costs and benefits of fuel treatments

By 2004, the provincial government had developed a strategic plan to improve fire prevention in the interface through fuel management (see discussion below).

In 2006, the Forest Practices Board examined the status of fuel management in BC, and published a special report entitled *Managing Forest Fuels*.[2] At that time, the Board made recommendations to government, and those that are relevant to this report will be discussed in this report.

The Fuel Management Program

The provincial fuel management program is funded by the Ministry of Forests and Range (MFR) and administered by UBCM. Under this model, local governments are the project proponent, with support from the provincial government.

The program has three components:

1. CWPPs
2. Pilot projects
3. Operational treatments

1. CWPPs

CWPPs help communities improve fire prevention and protection in interface areas. CWPPs identify the areas at risk for interface fires, suggest measures to reduce those risks and also provide a plan of action. A CWPP is normally required before UBCM will fund a fuel treatment.

Piling debris at roadside at Woss. Photo courtesy of the Regional District of Mount Waddington.

UBCM will pay 50 percent of the cost of a CWPP, up to a maximum of $15,000. All local governments and First Nations are eligible for the program. As of June 30, 2009, 84 local governments encompassing over 100 communities have prepared, or are preparing, a CWPP.

[2] Available at http://www.fpb.gov.bc.ca/assets/0/114/178/184/360/df039ffb-4ac0-46d9-a654-ac6e53fc88d2.pdf

2. Pilot Projects

Pilot projects are designed to showcase fuel management treatments to the public, to test various fuel management practices, and to gain an appreciation of costs. Twenty-six pilot projects have been completed. UBCM will pay up to half of the cost of a pilot project.

3. Operational Treatments

Operational treatments are aimed at improving community safety by reducing forest fuels. Typical treatments include thinning, pruning and clean-up of surface fuels including needles, twigs and branches.

Prescription - A site-specific operational plan that describes the fuel treatment objectives for an area, and the specific activities that are to be carried out.

UBCM will fund all of the cost of developing treatment prescriptions for fuel management projects. Until recently, UBCM funded up to half of the cost of treatments, except in areas affected by the mountain pine beetle, where it funded up to 75 percent of the cost. On October 1, 2009, the Minister of Forests announced that UBCM will fund up to 75 percent of operational treatments, regardless of whether or not stands are affected by the mountain pine beetle (MPB).

Costs not paid by UBCM are the responsibility of the local government. The local government's contributions must be either cash or "in-kind" (e.g., staff time or provision of geographic information system services). Some communities have successfully leveraged funding from other provincial or federal sources including the Job Opportunity Program of the Community Adjustment Fund to fulfill their contribution requirements.

In support of the fuel management program, government established fuel management specialists in each of the six fire centres in the province. Fuel management specialists review CWPPs, project prescriptions and operational treatment proposals, and provide technical fuel management expertise and advice to local governments and UBCM. They also ensure that everyone necessary to facilitate a successful project, including representation from the forest district, wildfire management branch, licensees, and the local fire department, among others, is at the table. Additional resources were announced in October 2009 through the Accelerated Community Wildfire Protection Initiative.

The Accelerated Community Wildfire Protection Initiative

After the 2009 fire season, the ministry anticipated that many communities might be interested in developing CWPPs and that there would be an increased interest in managing fuels in the interface. As a result, on October 1, 2009, the Minister of Forests and Range announced the Accelerated Community Wildfire Protection Initiative. Its purpose is to provide staff and resources to assist communities in developing and implementing CWPPs.

First Nations communities throughout the Province are being assisted by the First Nations Emergency Services Society (FNESS). FNESS provides both professional and administrative expertise to First Nations in the same way that ministry fuel management specialists do for local governments.

Government has also completed a provincial strategic threat analysis,[3] which identifies areas at risk of interface fires within two kilometres of communities. This information is available free of charge to local governments for use in preparing CWPPs.

The provincial strategic threat analysis identified 1.7 million hectares of potentially hazardous fuels in and around communities, with 685,000 hectares identified as "high risk." These figures were quoted extensively in the media during the summer of 2009, but not all of that area would actually be treated. In practice, a CWPP identifies priority areas for treatment. For some communities, that is broken down further into different zones where treatments are more intense based on proximity to people's homes.

What did we hear?

As we discussed fuel management with local government officials, practitioners, provincial government staff and others, we heard a number of common issues and perceptions from those trying to manage fuel around their communities. Other communities and individuals contemplating fuel management may share some of the same concerns. These concerns are presented below, along with examples of how communities are making fuel management work.

Common Concerns

1. This is Not our Job

The *Firestorm 2003 Provincial Review* stated:

> It is not just the responsibility of senior governments to manage these risks. Local governments and individuals must also do their part.

Fuel treatment at Jean Road in Kelowna. Dead pine and thin, suppressed trees were removed. Debris was chipped on site.

While some local governments accept responsibility for fuel management on *municipal* land, they do not believe it is their job to treat *Crow*n land in and around their communities because they did not create the hazard. We heard

[3] Provincial Strategic Threat Analysis maps are available at https://ground.hpr.for.gov.bc.ca/provincialstrategicthreatanalysisprofessional.htm

the term "downloading" used often and that is true insofar as communities are being invited to do work that was previously not done.

Some people have suggested that many more communities would participate in the fuel management program if the provincial government took the lead and guided them through the process, as opposed to communities having to be the project proponent, and that may be true. However, while communities can choose not to manage fuel on Crown land—and some have—there are risks associated with that approach, as wildfires do not stop at administrative boundaries. Risks must be balanced against benefits, and participating in the fuel management program gives communities a say in what happens to the land surrounding their homes, and is an investment in community safety.

In the Board's view, as long as local governments continue to approve development and increase the size of the wildland-urban interface, they need to consider wildfire risk to residents and be proactive in managing that risk. Furthermore, it is also the responsibility of individuals to take steps to protect themselves and their property from wildfire.

2. Funding

Funding is probably the biggest issue facing many communities interested in fuel management. Complicating matters is that fuel management requires recurring maintenance over time and long-term funding is not assured.

Cities have larger tax bases and more capacity to undertake fuel management than smaller communities. Yet many unincorporated areas are at the greatest risk of interface wildfires. An in-kind contribution of 50 percent for a CWPP may be possible, but 25 percent for an operational treatment may seem insurmountable. However, communities are successfully accessing different funding sources and providing in-kind contributions to make projects happen. The list of fuel management projects in Appendix 1 includes information about funding sources.

Ministry fuel management specialists, First Nations Emergency Services Society staff and UBCM are there to help make it happen and can provide advice about funding sources.

3. Capacity

Many local government representatives told us they were doing fuel management "off the side of their desk." The job may fall to a fire chief, an emergency planner, or an economic development officer. Regardless, these individuals have a full workload and often are not familiar with fuel or forest management. For them, the learning curve is steep. However, we met many who have risen to the challenge and, by getting the job done, are now recognized as leaders in their communities and as knowledgeable contacts for others contemplating similar work.

Aside from in-house resources, one approach that has worked successfully for some local governments is to hire a consultant to secure funding, and to plan and implement fuel treatments. West Kelowna did this in the summer of 2009 through a request for proposal (RFP) process. A side benefit to hiring a consultant is that there is continuity within the program from planning through to execution.

Collaboration is another approach. For example, the City of Port Alberni and the Alberni-Clayoquot Regional District have collaborated on emergency planning by appointing one shared staff member as both the Emergency Planning Coordinator for the city and the Emergency Program Manager for the regional district. The opportunity for coordination of community wildfire protection planning and future operational treatments is much greater with one person responsible, than if two individuals representing two local governments were involved.

4. Liability

Liability issues are a concern for many communities. For example, if a hazard is identified in a CWPP but nothing is done to reduce the hazard, could a local government be held liable for damages from a wildfire? Further, what if there is not enough money to fully implement a CWPP and treat all hazardous areas?

Treated stand at Kaslo. Deciduous and large Douglas fir were preserved. The conifer understory was removed. Thinning targeted clumps of regeneration under the canopy of larger trees. Trees were pruned to 2 m. This debris is waiting to be burned.

UBCM researched these issues and secured a legal opinion to address liability concerns.[4] It concludes that a local government should not incur liability if the decision to not implement a CWPP meets the legal test for what constitutes a bona fide policy decision. For example, a municipality may decide not to implement a CWPP (or part of one) due to budget considerations or concern about liability.

But what if a community decides to participate in the fuel management program and actually does fuel management work on Crown land? Could it be held liable for any damages if a prescription was negligently prepared or

Untreated stand at Kaslo

[4] Available at http://www.ubcm.ca/assets/Funding~Programs/Documents/wildfire-liability-opinion.pdf

implemented, or if, through negligence, it started a fire? The answer to this is "yes." A community might choose to manage this risk by deciding not to treat fuels on Crown land.

However, local governments deal with risk every day and most have policies and operating procedures to manage that risk. That's why they clear snow from roads and fix cracks in the sidewalk. Similar policies and procedures could be developed for fuel management. The local governments that participate in the fuel management program have decided that the risks of treating fuel on Crown land are less than the risk of doing nothing.

5. Reluctance to Act

It can be difficult to attract and maintain local government officials' interest in addressing interface hazard and risk. The impact of the mountain pine beetle has raised both the fire hazard and awareness of increasing fire hazard in wildland-urban interface areas, but the pine beetle is not an issue everywhere.

Similarly, large interface fires help to focus public and media attention on the issue, but only for a few years at best. Because elected officials have a number of ongoing and emergent issues, the buildup of fuels in the interface usually ranks quite low on the list until there is an actual emergency. Compounding the problem is that it is socially difficult to harvest trees near communities, and residents can oppose fuel management proposals. Many people have moved to interface areas because of the surrounding forest, and the privacy and lifestyle that it offers. They do not want to see the forest altered.

Almost all of the communities we met stressed the importance of having a community "champion" for the cause of forest fuel management in WUIs. A champion could be an elected official, a local government staff member, a member of the public or a consultant—as long as that person is someone who understands the risks, sees the big picture, has the energy and enthusiasm to move forward, and has the skills and connections to implement a successful fuel reduction program.

6. Professional and On the Ground Expertise

Some participants reported difficulties in finding qualified people, as there is an ongoing shortage of knowledgeable and experienced forest professionals who prepare fuel management plans and prescriptions. Larger communities may have access to forest professionals, either as internal staff or through ongoing contractual relationships, but even so, these professionals may have limited experience with fuel hazard, wildfire risk assessment or forest fuels management. There is a substantial pool of knowledgeable and experienced individuals within the provincial government, but they are generally not available as a resource for local governments. This lack of access to experienced personnel often forces communities to either compete for the services of a very small pool of qualified consultants or to undertake plans and projects using staff who have only limited knowledge and experience with fuel management.

This problem is not unique to the subject of fuel management, but applies to wildfire management in general. A long-term solution probably lies in a partnership between government, industry, educational institutions and professional organizations. In the meantime, the fuel management program staff can provide suggestions, and word-of-mouth has worked well for some communities.

What did we learn and see in the field?

1. A CWPP Should Come First

A CWPP identifies priority areas for treatment — the sites that pose the highest risk are treated first. Some of the projects we visited were not covered by a CWPP and there are risks to this approach. First, priority areas are not necessarily treated and conversely, low priority areas could be treated and scarce resources wasted. Secondly, the treatment may not integrate into an overall, strategic level approach to protecting a community.

A CWPP can also be instrumental in securing funding for treatments. In 2009, one BC community received over $500,000 from the Job Opportunities Program. Because the city did not have a CWPP, which would have provided "shelf-ready" projects that could take advantage of the funding opportunity, council instead directed the funding towards recreational trails that were proposed in a parks department plan. Had there been a CWPP in place, some funding might have gone towards fuel management.

2. A Prescription is a Must

We encountered some projects where prescriptions were not in place before work began. Prescriptions need to be in place before any treatment occurs to ensure that other values, such as visual quality, are recognized and accommodated to the extent possible, and that all possible issues have been considered. Also, a prescription and map make it easier for workers on the ground to understand and carry out the treatment satisfactorily. Because fuel treatments also require maintenance over time, the original prescription will be useful when planning additional treatments.

Prescriptions should address post-treatment risk assessment. For example, retaining dominant spruce in an open canopy or retaining lodgepole pine in a mountain pine beetle area could result in significant mortality to the residual stand, creating the need for further treatments long after funding has dried up.

3. Coordination and Communication

Fuel management can be undertaken by local governments, forest licensees, First Nations, and land managers, including the local forest district, utilities and private landowners. It is critical that everyone understand the overall plan to protect the community and be aware of what others are doing. The provincial government fuel management specialists can help to identify all of the players but, under the current model, it is up to the local government, as the

proponent, to invite them to the table. The goal is a coordinated approach to do what is best for a community from a safety perspective.

At one site, small-scale salvage harvesting was done around a community and a large amount of low-grade timber was left on the site after logging was complete, in part because of the harvest system, but also because there was a need to keep cattle away from a lake. The result was a fire hazard that was actually higher after harvest than before. To address the situation, a professional forester assessed the site and made a prescription for debris management. The clean-up involved significant additional expense.

Afterwards, another forest professional familiar with the fuel treatment said that this situation illustrates how important it is to closely tie together fuel management contract work and community interface harvesting to ensure an effective, well-timed and coordinated treatment.

A recent fuel management treatment affected by new development.

Another issue related to coordination involves local planning. By their very nature, interface areas are subject to development. The Board knows of two examples where forested sites were treated to reduce fuels, but were later cleared for development. This demonstrates the importance of checking with local land managers and planners as treatment prescriptions are developed.

4. Debris Management

Fuel management creates debris, and a range of approaches for dealing with debris were seen during this investigation. In a perfect world, debris would be hauled to a nearby facility where it would be cleanly burned to generate heat or power and would help pay for the treatment. But in most cases, we aren't there yet. Today, chipping and burning are the most common methods of dealing with debris.

Chipping debris at Woss. Photo courtesy of the Regional District of Mount Waddington.

Chipping

Chipping is an increasingly popular method of dealing with debris. Chipping is an easy and practical way to deal with debris because

chips can be blown back onto the site and onto trails, hauled away for disposal or used as hog fuel. The Board observed some situations where chips were raked to speed up decomposition and to minimize impacts to the site.

However, some questions remain about chipping, especially when the chips are disposed of on-site. What effect do chips have on fire behavior, site productivity, soil chemistry and regeneration? How long do these effects last? What is an acceptable chip depth?

These are questions the Board believes need to be answered. It may also be appropriate to develop some best practices for chipping.

Burning

Debris is often piled and burned throughout a site, or transported to an air curtain burner in a central location. But burning can't be done everywhere in the province. For example, open burning is not permitted in parts of Prince George.

In areas of the province where burning is permitted, it is regulated by the *Open Burning Smoke Control Regulation* (OBSCR). Under the OBSCR, burning can only be done when the smoke will vent well. In some locations, that could mean burning is only permitted during a small window, or a few days, each year. The main concern with open burning is the effect small particulate matter in smoke has on human health.

Through this investigation, the Board heard that fire needs to be returned to the landscape as a fuel management tool. But a number of factors, including the OBSCR, local bylaws and liability concerns, prevent this economical and effective tool from being used.

In 2006, the Board recommended in its *Managing Forest Fuels* report:

> The provincial government should address public and stakeholder concerns with the increased use of prescribed fire and other fuel reduction techniques. The challenges of liability, public acceptance, smoke management and incentives need to be addressed so this valuable tool can be returned to the landscape.

This recommendation has not been fully addressed to date. However, the Wildfire Management Branch's strategic plan encourages the appropriate use of fire and ongoing fire management planning will identify appropriate areas to encourage fire. A prescribed burning committee has also been set up to develop standards and training resources.

A Pemberton unit crew member burning debris.

5. Stocking Standards

When Crown land is logged, the licensee is generally required to regenerate the site. Normally blocks are planted in accordance with stocking standards that set out the species and minimum number of well-spaced trees.

Ladder Fuels - Branches, shrubs or an understory layer of trees, which allow a fire to spread from the ground to the canopy.

Fuel management often involves the removal of ladder fuels, but planting trees ultimately means creating more ladder fuels. At one site visited, three coniferous tree seedlings were planted for every tree removed.

Lower stocking standards can be approved for fuel management projects, and we saw several examples where district managers did so. The tool is available but it is not always used.

6. Merchantable Timber

In some cases, fuel treatments can involve the harvest of merchantable timber. This can complicate matters for a local government because a person must pay stumpage (a fee) for the right to harvest timber on Crown land.

Consider an example where a local government puts out a fuel management contract that includes merchantable timber. In poor markets, and with beetle-killed wood, harvesting and stumpage costs may exceed the proceeds from the sale of the wood.

To offset this cost and make the project financially viable, a contractor would increase his or her bid for the project. This would directly affect the local government because its in-kind contribution would also have to increase as the project cost increases. The UBCM contribution would also have to go up, making less money available for other projects.

However, in good markets and with the right product, the merchantable portion of a project could pay for the fuel management portion.

The public expects that merchantable timber be put to good use and that it gets fair value from it, but at the same time there needs to be recognition of this issue. Government needs to figure out how to do that in the context of fuel management and public safety, while at the same time ensuring that the solution is not viewed as a subsidy with associated international trade implications.

Conclusions

Communities and others involved in fuel management should be commended. They have recognized that they have a role to play in fuel management, and have planned and completed projects on the ground that will increase public safety. Perhaps more importantly, they have learned how to deliver the program, despite the challenges identified in this report. They also have valuable experience and advice to those who are contemplating a program of their own.

Fuel management is a huge task and obviously more must be done. At this time, funding is still available through the joint provincial government-UBCM program.

The following pages offer tips for local governments, consultants and private landowners contemplating or involved in fuel management. These tips come straight from the people making it happen

Tips for Local Governments

Get started. Find out which communities are moving ahead with fuel management programs and talk to them. Local government contacts are provided along with project details in Appendix A of this report. Ministry fuel management specialists and First Nations Emergency Services Society staff are there to help you. Contact information is available here: https://ground.hpr.for.gov.bc.ca/programcontacts.htm

Find your champion. The right person with the drive to move things forward is critical to success.

Communicate. Let local residents know what you are planning. Fuel management specialists can provide you with a sample communication plan.

Prepare a CWPP. The prioritized projects that it contains will provide "shelf-ready" projects to take advantage of funding opportunities.

Check references. When considering hiring a fuel management professional and on the ground workers, such as equipment operators, check with other communities for advice and references. This report provides a list of projects visited by the Board along with contact information.

Consider using a request for proposal. If your community doesn't have the time and/or money to participate in the fuel management program, a request for proposal (RFP) is one method that can be used to find a contractor who can secure the funding, complete a plan and implement the treatments. The provincial fuel management specialists can provide an RFP template.

Find a partner. Look for opportunities to pool expertise, resources and infrastructure with other local governments, the local MFR Wildfire Management Branch, utility providers, private landowners and First Nations communities. This also applies to funding; if communities have joint plans, then funding in one community can be used as 'in-kind' funding for an adjacent community.

Tie treatments into development approvals. Avoid creating more interface areas without the needed mitigation work. The district of North Cowichan amended its official community plan to address interface fire risk to a planned subdivision. The developer was responsible for ensuring that materials met or exceeded class B fire rating, and also for constructing and maintaining a 10-metre fuel-free zone on private property.

Reconsider the role of fire as a fuel management tool within your jurisdiction. Fire and smoke is an inevitable occurrence within most interior forests; better that it be controlled fire than wildfire.

Tips for Consultants

Review the ABCFP Standards of Professional Practice. Ensure that you have the skills, knowledge and experience necessary for fuel management.

Think beyond the immediate treatment. Is there an opportunity to extract value from a stand in the years after a fuel treatment? For example, if a prescription contains merchantable and non-merchantable components, consider completing the prescription in two or more phases, taking advantage of profitable markets to help pay for the project.

Consider post-treatment risks. Windthrow, increased fuel hazard, and the creation of new access for off road vehicles or cattle can be unintended results of fuel treatment.

Take a strategic approach. Link features such as agricultural fields, right-of-ways, highways and water bodies in a coordinated approach to protecting the community.

Coordinate with other landowners and land managers. Coordinating with the forest district manager and licensees such as community forests, woodlots or forest licensees can increase the area or effectiveness of treatments. For example, in one city, the effectiveness of a fuel treatment on Crown land could have been improved if the adjacent woodlot licensee had also treated his stands.

Review development proposals. Ensure that the sites you are considering for treatment are not slated for development.

Tips for Residents

FireSmart your property. The *Homeowner's FireSmart Manual* can be obtained through the Office of the Fire Commissioner and is available for download.
http://www.pssg.gov.bc.ca/firecom/pdf/homeowner-firesmart.pdf

Ask your local government if your community is covered by a Community Wildfire Protection Plan. If not, find out why.

Tell your local leaders why you think it is important to protect your community from wildfire. Show them this report.

Appendix 1

COASTAL FIRE CENTRE						
Proponent	**Location**	**Description**	**Treatment**	**Funding**	**Links**	**Contacts**
District of North Cowichan	Mt. Tzouhalem	Treatment of 7 ha of municipal forest land beside a subdivision. Site rated as an extreme hazard in the CWPP.	7 m fuel-free zone and 23 m modified fuel zone (ground and ladder fuels removed.) Work done by hand by First Nations crew. Debris either burned or chipped on site.	Pilot project and operational fuel management funding from UBCM.	Google Earth	Darrell Frank RPF, Municipal Forester. frank@northcowichan.bc.ca Margaret Symon RPF, consultant. Strathcona.fc@shaw.ca
Regional District of Mount Waddington	Woss	Implementation of the forest fire fuel hazard abatement plan, including a community fire guard. 13 ha of Crown land treated.	Brushing and pruning to 2 m with complete removal of 0-15 cm stems. Debris chipped and burned. Work done by displaced workers.	Job opportunities program.	Google Earth	Neil Smith. Manager of Economic Development. nsmith@rdmw.bc.ca Kevin Mintz RPF, consultant. Kevin.mintz@sfmi.ca
Resort Municipality of Whistler	Lost Lake	Linear treatment along recreation trails and around a ticket booth on municipal land. 5.3 ha. Linear treatment approach recommended in CWPP.	Pruning to 1.5 m, thinning and removal of surface fuels. Work done by municipal and Wildfire Management Branch (WMB) crews. Debris chipped and left on-site or hauled away.	Pilot project and operational fuel management funding from UBCM.	Google Earth	Rob Whitton, Fire Chief rwhitton@whistler.ca Bruce Blackwell RPF, consultant. bablackwell@bablackwell.com
Village of Pemberton	Pemberton Creek	Treatment of 15 ha of Crown land adjacent to the village identified as a priority in the CWPP.	Pruning of large stems and removal of the understory. 300 debris piles burned. Work done by hand by WMB unit crew members.	Pilot project funding from UBCM.	Google Earth	Russell Mack, Fire Chief. rmack@pemberton.ca John Davies RPF, consultant. john@davieswildfire.com

CARIBOO FIRE CENTRE						
Proponent	**Location**	**Description**	**Treatment**	**Funding**	**Links**	**Contacts**
Cariboo Fire Centre	White Road (Amber Ridge), Williams Lake	13 ha of Crown land treated in an area known for unattended campfires and bush parties.	Pruning to 3 m and spacing of understory to reduce ladder fuels. Debris piled and burned by WMB crew.	Operational funding from fire centre.	Google Earth	Rory Colwell, Fuel Management Specialist Rory.Colwell@gov.bc.ca
Ulkatcho Indian Band	Anahim Lake	89 ha in and around houses on the 2 Mile Indian reserve.	Mechanical felling and skidding of beetle-killed lodgepole pine. 100 m fireguard constructed. Hand thinning and pruning of live conifers. Slash piled and burned.	Natural Resources Canada (NRCAN) mountain pine beetle funding.	Google Earth	Laurie Vaughan, Fraser Basin Council. lvaughan@fraserbasin.bc.ca Scott Forrest RPF, consultant. sforrest@netbistro.com
Cariboo Regional District	Fox Mountain, Williams Lake.	6 ha roadside treatment of Crown land between a woodlot and a subdivision.	30 m deep strip. Hand removal of understory and regeneration with pruning to 3 m. Debris was pulled by hand to roadside, chipped and hauled to an EPCOR power plant.	UBCM and Job Opportunities Program.	Google Earth	Rowena Bastien, Manager Protective Services. rbastien@cariboord.bc.ca Don Skea, Forest Operations Supervisor UBC. Don.Skea@ubc.ca
Cariboo Regional District	Williams Lake Airport	10 ha mechanical treatment	Mechanical removal of dead pine and hand pruning and thinning from below. Material removed to a pellet plant and EPCOR power plant.	UBCM pilot project.	Google Earth	Don Skea, Forest Operations Supervisor UBC. Don.Skea@ubc.ca
District of 100 Mile House – J. Hinsche Contracting Ltd.	Horse Lake Road	28 ha treatment of beetle-killed pine stands in a high hazard area.	Dead pine felled and chipped in place. Douglas fir pruned.	Job Opportunity Program.	Google Earth	Steve Law RPF, consultant. llhoffice@dwbforestry.com

PRINCE GEORGE FIRE CENTRE						
Proponent	**Location**	**Description**	**Treatment**	**Funding**	**Links**	**Contacts**
City of Prince George	North College Park	8 ha treatment in MPB affected stand in municipal green space.	Dead, susceptible and hazardous pine removed. Where the overstory was dense, pruned to 2 m. Deciduous retained. Logs hauled away and debris mulched on site.	UBCM operational treatment.	Google Earth	Lauren Phillips, lphillips@city.pg.bc.ca Joel Runtz, consultant. Joel.runtz@tdb.ca
City of Prince George	Wallace Park	1.2 ha treatment in MPB affected stand in a municipal park beside residential area.	Dead, susceptible and hazardous pine removed. Where the overstory was dense, prune to 6 m. Deciduous retained. Logs hauled away and debris was mulched on site. A small amount was hauled away in bins.	UBCM operational treatment.	Google Earth	Lauren Phillips, lphillips@city.pg.bc.ca Joel Runtz, consultant. Joel.runtz@tdb.ca
City of Prince George	Hart Area (Heather Park and associated greenbelts)	7.1 ha treatment in MPB affected stand on municipal land beside residential area.	Dead, susceptible and hazardous pine removed. Overstory reduced to 35% crown closure. Logs hauled away and debris mulched on site.	UBCM operational treatment.	Google Earth	Lauren Phillips, lphillips@city.pg.bc.ca Joel Runtz, consultant. Joel.runtz@tdb.ca
City of Prince George	Moore's Meadow	37 ha treatment to reduce fire risk in a municipal park.	Dead, susceptible and hazardous pine removed. Where the overstory was dense, pruned to 6 m. Deciduous retained. Creation of 10 m defensible space beside homes. Logs hauled away and debris mulched onto trails and raked.	UBCM pilot project and Job Creation Partnership funding.	Google Earth	Lauren Phillips, lphillips@city.pg.bc.ca Joel Runtz, consultant. Joel.runtz@tdb.ca
City of Prince George	C1-A (Pidhemy)	21.5 ha treatment in MPB killed stands on Crown land in the Prince George Community Forest. Project not yet complete.	Dead, susceptible and hazardous pine removed. Reduce overall crown closure to 35%. Where the overstory is dense, ensure height to live crowns is 6 m. Deciduous retained. The debris from works conducted by the provincial protection crews: logs were bucked up and piled at various entry points to the area where residents were happy to collect them. Other debris was chipped and blown back onto the site (not onto the trails).	UBCM operational treatment.	Google Earth	Lauren Phillips, lphillips@city.pg.bc.ca Joel Runtz, consultant. Joel.runtz@tdb.ca

PRINCE GEORGE FIRE CENTRE Cont'd:						
Proponent	**Location**	**Description**	**Treatment**	**Funding**	**Links**	**Contacts**
City of Prince George	Forests for the World	80.4 ha mechanical treatment on Crown land in the Prince George Community Forest. A popular recreation area. Treatment not yet complete.	Dead pine and hazard tree removal. Understory thinning 10 m either side of trails and pruning 2-3 m. Deciduous retained. Some debris in Phase I (east half) was chipped and blown back onto the site (not onto the trails), while some was chipped and hauled for composting or use as landscaping material. Debris in Phase II (west half) is being mulched on site.	UBCM operational treatment, Job Creation Partnership and Natural Resources Canada funding.	Google Earth	Lauren Phillips, lphillips@city.pg.bc.ca Joel Runtz, consultant. Joel.runtz@tdb.ca
Regional District of Fraser-Ft. George	Red Rock Ball Diamond	9.9 ha treatment of MPB killed timber in a rural area. Regional district property.	MPB killed pine harvested. Pruning to 2 m. Debris mulched and burned. Contractor carried out the work.	UBCM operational treatment.	Google Earth	Dana Ferguson, RDFFG. dferguson@rdffg.bc.ca
Regional District of Fraser-Ft. George	Beaverly Community Hall	15.8 ha of MPB killed timber treated adjacent to a community hall. Regional district property.	Removal of dead pine and hazardous trees including aspen. Some debris chipped; remainder piled and will be hauled to landfill.	UBCM and Job Opportunities Program.	Google Earth	Dana Ferguson, RDFFG. dferguson@rdffg.bc.ca
Regional District of Fraser-Ft. George	Miworth Community Hall	5.6 ha of MPB killed timber treated in a regional district park.	MPB killed pine harvested. Pruning to 2 m. Debris mulched. Firewood left for residents. Contractor carried out the work.	UBCM operational treatment.	Google Earth	Dana Ferguson, RDFFG. dferguson@rdffg.bc.ca
Regional District of Fraser-Ft. George	Wilkins Regional Park	50 ha fuel treatment in a regional park beside the Nechako River.	Mechanical removal of dead and MPB-infested pine. Debris mulched on site.	UBCM operational treatment.	Google Earth	Dana Ferguson, RDFFG. dferguson@rdffg.bc.ca
Regional District of Fraser-Ft. George	Bear Lake	21 ha treatment of MPB-killed pine in and around Bear Lake.	Dead pine harvested. Deciduous and healthy pine retained. Debris piled and burned. WMB crews did the work.	Prince George Fire Centre.	Google Earth	Steve Matlasheski, Prince George Fire Centre. Steve.matlashewki@gov.bc.ca
British Columbia Timber Sales	Bear Lake	124 ha timber sale licence to remove MPB killed pine. Crown land.	Clearcut with reserves.	Competitive bid process under the BCTS program.	Google Earth	Rick Weisgerber RPF, Practices Forester. Rick.weisgerber@gov.bc.ca

SOUTHEAST FIRE CENTRE						
Proponent	**Location**	**Description**	**Treatment**	**Funding**	**Links**	**Contacts**
BC Parks	Syringa Provincial Park	20.6 ha fuel treatment to create a more open forest while protecting campgrounds, viewscapes and trails in a provincial park.	All yellow pine, larch, birch and maple and larger Douglas fir retained. Selected trees felled by hand and hoe-chucked to roadside. The target is 100-250 stems/ha remaining. Debris piled and burned with plans to broadcast burn.	BC Parks.	Google Earth	Steve Schmidt RPF, consultant. fireflyconsulting@shaw.ca
Tembec	Kimberley Nordic Club	188.6 ha treatment on Crown land to remove MPB-infested trees and mitigate fire risk. Site includes cross-country ski trails.	Remove MPB infested trees and reduce stocking of susceptible trees. Increase crown-base height, while maintaining features desired by skiers. After first entry, remaining pine was infested or broken by snow. Second entry has been done. Logs hauled away.	Harvesting conducted under Tembec's forest licence.	Google Earth	Nick McRae RPF Tembec Industries (250) 426-6241
City of Kimberley	Levirs Ave.	75 ha treatment on municipal land.	Trees bucked into 2 m lengths and piled for firewood or chipped. Some debris ground up for hog fuel. Work done by WMB crews.	UBCM Pilot Project.	Google Earth	Al Collinson, Fire Chief. acollinson@city.kimberley.bc.ca
City of Kimberley	Overwaitea Hill	14 ha treatment to reduce the probability of interface fires on Crown land in the Kimberley Nature Park.	Hand piling of surface fuels and understory thinning, piling and burning of non-merchantable conifer stems. Work done by WMB crews.	UBCM operational treatment.	Google Earth	Al Collinson, Fire Chief. acollinson@city.kimberley.bc.ca
City of Cranbrook	McCleary Park	13 ha treatment on municipal land to mitigate fire hazard to surrounding community.	Surface fuels, standing dead trees and small Douglas fir removed. ATV used for skidding. Leave trees pruned to 2 m. Debris burned in a sloop or chipped. Work done by WMB crews.	UBCM operational treatment and WMB crew.	Google Earth	Wayne Price, Fire Chief. wprice@cranbrook.ca
City of Cranbrook	Moir Centennial Park	27.5 ha treatment to reduce fuel and bark beetle hazard.	All Douglas fir and smaller pine removed through mechanical and manual thinning to encourage more open forest. Target of 88 trees/ha remaining. Site was also broadcast burned.	UBCM operational treatment.	Google Earth	Wayne Price, Fire Chief. wprice@cranbrook.ca

SOUTHEAST FIRE CENTRE Cont'd:						
Proponent	**Location**	**Description**	**Treatment**	**Funding**	**Links**	**Contacts**
City of Cranbrook	Airport	87 ha of clear cutting, mechanical, and hand thinning of municipal land around the airport.	Two blocks immediately beside the runway cleared. This also contributed to flight safety. Dense pine saplings thinned from 7,000 stems/ha to 400 stems/ha. In older stands, more open forest was encouraged by reducing density to <75 trees/ha. Logs hauled away. Debris hauled away for hog fuel.	UBCM operational treatment.	Google Earth	Wayne Price, Fire Chief. wprice@cranbrook.ca
Village of Kaslo	Lot 653	26.4 ha (in 13 units) mostly manual fuel treatment on Crown land near Kaslo. 3.72 km of trails constructed to provide fire access and recreational benefits.	Deciduous and large Douglas fir preserved. Conifer understory removed. Thinning targeted clumps of regeneration under the canopy of larger trees. Trees pruned to 2 m. Debris piled for firewood, burned or chipped. Work done by displaced forest workers.	Job opportunities program and UBCM operational treatment.	Google Earth	Greg Lay, Mayor. glay@telus.net

KAMLOOPS FIRE CENTRE						
Proponent	**Location**	**Description**	**Treatment**	**Funding**	**Links**	**Contacts**
Merritt Fire Zone	Coldwater	109 ha treatment to reduce fire hazard and fuel loads beside IR#1.	Beetle infested and danger trees felled and burned. Douglas fir understory thinned from 1,600 to 100 stems/ha. Remaining understory pruned to 2.5 m. Debris hand piled and burned.	Zone	Google Earth	Steve Doubinin, Forest Protection Technician. Steve.Doubinin@gov.bc.ca
Merritt Fire Zone	Glimpse Lake	27 ha linear treatment to reduce fire hazard and fuel buildup near the community.	Beetle infested and danger trees felled and burned. Douglas fir understory thinned from 400 to 100 stems/ha. Remaining understory pruned to 2.5 m. Debris hand piled and burned.	Zone	Google Earth	Steve Doubinin, Forest Protection Technician. Steve.Doubinin@gov.bc.ca
City of Merritt	Bench	73 ha treatment to open up the forest and reduce the potential for a crown fire in Merritt's interface action zone. 20 m fuel break also constructed.	Mechanical harvesting of dead pine followed by a prescribed burn. Logs hauled to a mill. Debris not burned was chipped and hauled to a mill.	Licence to cut. Zone funded piling and burning.	Google Earth	Steve Doubinin, Forest Protection Technician. Steve.Doubinin@gov.bc.ca Tom Lacey, consultant. telacey@telus.net
Merritt Fire Zone	Fox Farm	15 ha linear treatment to reduce risk of a crown fire beside the Fox Farm subdivision.	Dead and dangerous trees felled. Understory spaced and remaining trees pruned to 2.5 m. Surface fuels and debris piled and burned by WMB crew.	Zone	Google Earth	Steve Doubinin, Forest Protection Technician. Steve.Doubinin@gov.bc.ca Tom Lacey, consultant. telacey@telus.net
Merritt Fire Zone	Peter Hope Lake	11 ha fuel treatment to reduce the fire hazard and fuel load around a community.	Understory spaced and pruned to 2.5 m. Debris piled and burned by WMB crew.	Zone	Google Earth	Steve Doubinin, Forest Protection Technician. Steve.Doubinin@gov.bc.ca
City of Kamloops	Blackwell Road	36 ha fuel treatment to reduce wildfire hazard and fuel loading.	Salvage harvesting followed by a fuel treatment. Dead and MPB-infested pine removed. 25 ha mechanical, 11 ha by hand. Deciduous and Douglas fir retained. Debris piled and burned.	UBCM operational treatment.	Google Earth	Kelly Johnston, City of Kamloops. kjohnston@kamloops.ca Bruce Morrow RPF, consultant. brucemorrow@shaw.ca

KAMLOOPS FIRE CENTRE Cont'd:						
Proponent	**Location**	**Description**	**Treatment**	**Funding**	**Links**	**Contacts**
City of Kamloops	Rose Hill	22 ha treatment to reduce wildfire hazard and fuel loading beside a subdivision.	Combination of mechanical and hand treatments. Dead and MPB-attacked pine removed. Understory spaced and pruned. Wildlife trees, deciduous and Douglas fir and ponderosa pine regeneration retained. Debris piled and burned.	UBCM operational treatment.	Google Earth	Kelly Johnston, City of Kamloops. kjohnston@kamloops.ca Bruce Morrow RPF, consultant. brucemorrow@shaw.ca
Kamloops Fire Zone	Paska Lake	3.5 ha manual treatments on Crown land to complement small scale salvage harvesting. Overall goal is to reduce fire hazard to the community.	Fall and burn dead and dying lodgepole pine. Prune to 3 m and space leave trees to reduce ladder fuels. Debris piled and burned. Work done by WMB crew.	Zone	Google Earth	Hugh Murdoch, Forest Protection Assistant. Hugh.murdoch@gov.bc.ca
Vernon Fire Zone	Kalamalka Seed Orchard	16 ha fuel treatment on Crown land beside seed orchard and research station.	Dead pine removed. Thickets removed. Wildlife trees preserved. Remaining trees pruned to 3 m. Debris burned in 450 hand piles.	Zone	Google Earth	Rob Moore, Protection Officer. Robert.G.Moore@gov.bc.ca
Okanagan Shuswap Forest District	Oyama Lake	18 ha small scale salvage to remove dead pine around the community.	Clearcut with reserves with mechanical equipment. Timber processed at the stump. Some debris piled to keep cattle away from the lake; some piled and burned.	Small scale salvage authorized by the Okanagan Shuswap Forest District.	Google Earth	Kimm Magill-Hofmann, Tenures Forester. kimm.magill-hofmann@gov.bc.ca
Okanagan Shuswap Forest District	Beaver Lake	10 hectare small scale salvage on Crown land with plans to manage harvesting debris around cabins.	Mechanical harvesting of dead lodgepole pine. Logs decked off site. Debris not yet treated at time of site visit.	Small scale salvage authorized by the Okanagan Shuswap Forest District.	Google Earth	Kimm Magill-Hofmann, Tenures Forester. kimm.magill-hofmann@gov.bc.ca
Central Okanagan Regional District	Kalamoir Park	Multiple fuel management treatments followed by a 2.15 ha prescribed burn.	MPB-killed pine and hazard trees removed. Needles raked away from the base of trees. Prescribed burned.	UBCM operational treatment.	Google Earth	Cathy MacKenzie RPF, Forest Health Operator. Cathy.mackenzie@cord.bc.ca
Penticton Fire Zone	Trevor Road	8 ha fuel treatment in a residential area in West Kelowna.	Space trees 2-4 m between crowns. Prune 2.5-3 m. All deciduous retained. Slash piled by hand and burned. Work carried out by WMB crews.	Zone	Google Earth	Joel Rudyk, Crew Leader. Joel.rudyk@gov.bc.ca

KAMLOOPS FIRE CENTRE Cont'd:						
Proponent	**Location**	**Description**	**Treatment**	**Funding**	**Links**	**Contacts**
City of Kelowna	Jean Road	8.9 ha treatment on city property surrounded by homes.	Dead pine removed. Thin suppressed and intermediate trees. Prune remainder. Contractor hauled logs away. Debris chipped on site.	UBCM operational treatment and Service Canada. Residents also did work.	Google Earth	Blair Stewart, Urban Forest Health Technician. bstewart@kelowna.ca
Penticton Fire Zone	Penticton I.R. #2	10 hectare fuel treatment on undeveloped IR land within the city of Penticton.	Space stand by removing stems with the live crown distance of the overstory. Prune residuals to 3 m. Pile slash and burn.	Zone	Google Earth	Jim Mottishaw, Fire Protection Officer. Jim.mottishaw@gov.bc.ca
Penticton Fire Zone	Rose Valley Regional Park	Older treatment from 1998 on Crown land near homes. Wildfire in 2005.	30 m fuel break constructed. Stand pruned and spaced. Broadcast burned. Work done by WMB crew.	Zone	Google Earth	Jim Mottishaw, Fire Protection Officer. Jim.mottishaw@gov.bc.ca
Lillooet Fire Zone	Water Tower	Fuel treatment on hillside above residences.	Dead pine felled. Boles left on ground and debris piled and burned. Work done by WMB crew.	Zone. Fuel Mgt Extension Funding	Google Earth	Verne Rasmussen, Forest Protection Technician. Verne.rasmussen@gov.bc.ca
Xaxlip First Nation	Fountain Valley Road	Fuel treatment beside homes on Indian Reservation.	Spacing and pruning done by First Nations crew.	Local band and Fuel Management Extension Funding	Google Earth	Verne Rasmussen, Forest Protection Technician. Verne.rasmussen@gov.bc.ca
Lillooet Fire Zone	Kwotlenemo Recreation Site	Fuel treatment in the community of Fountain Lake.	Dead and MPB-infested pine removed. Work done by WMB crew.	Fuel Management Extension Funding	Google Earth	Verne Rasmussen, Forest Protection Technician. Verne.rasmussen@gov.bc.ca
Lillooet Fire Zone	Skihist Provincial Park	Fuel treatment around campsites in a provincial park.	Dead pine removed. Deciduous retained. Debris hauled off site.	Fuel Management Extension Funding	Google Earth	Verne Rasmussen, Forest Protection Technician. Verne.rasmussen@gov.bc.ca
Lillooet Fire Zone	Lac La Jeune Provincial Park	Fuel treatment around campsites in a provincial park.	Dead and hazardous trees removed around campsites. Debris piled and burned.	Zone	Google Earth	Hugh Murdoch, Forest Protection Assistant. Hugh.murdoch@gov.bc.ca

PO Box 9905, Stn Prov Govt
Victoria, BC, Canada V8X 9R1
Tel. 250.213.4700 | Fax 250.213.4725 | Toll Free 1.800.994.5899
For more information on the Board, please visit our website at: www.fpb.gov.bc.ca