100 Mile House Fire-Rescue

Fire Services Review

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Executive Summary

The 100 Mile House Fire-Rescue Department (the "Department") provides a range of emergency and non-emergency services in a fire protection area of some 97 square kilometres, protecting a population of more than 4,800 residents. It also responds to road rescue incidents over a larger, defined area within the southern Cariboo Regional District (the "CRD").

The Department operates from a single fire hall responding to an average of 25 incidents per month with a paid Fire Chief and 21 volunteers. Dispatch is provided by the Prince George Fire/Rescue Department using career fire dispatchers with call management software including radio and paging systems.

The Department operates quite efficiently in terms of its budget and on a per-capita basis is budgeted to cost $117 per year compared with a benchmark average of $144 per year.[1] Its training facility, built over the last several years and reflecting a significant investment of effort by the volunteer members and financial commitment by the District of 100 Mile House (the "District"), meets contemporary requirements and serves to train members of the Department as well as other departments within the region.

Priorities for the Department include an increase in staffing, replacement of fire apparatus nearing the end of its useable life, a review of radio system coverage deficits and a need to update and revise its service mandate, bylaws and mutual aid language. The Department and the District should also consider working with the CRD to develop a better integrated sub-regional model for the delivery of fire and rescue services in a partnership with adjacent fire departments.

In terms of staffing, the Department, like most volunteer departments, requires additional volunteers trained to the level of interior attack to maintain its current response model. The Department also requires additional staff to support the Fire Chief, as well as a defined succession plan. This staffing, which would include administrative support, would better enable the Department to ensure that all occupational health and safety requirements are being met, fire inspections conducted and that operational guidelines and preplans are regularly reviewed.

Operationally, the Department is well served by the location of its existing fire hall. It is well located and provides good coverage to its response area. However, it does require some remediation in terms of business continuity and upgrades to the physical facility to support a multi-gender fire department. The Department's mix of apparatus is generally appropriate; however, it is recommended that the pumper to be replaced shortly should be equipped with an elevated water stream to better manage structure fires given the limits on the Department's staffing and some of the particular fire hazards it is required to manage.

[1] It should be noted that, over the past five years, the Department has consistently spent less than its budget – resulting in an average surplus of about 17.5%.

The Department's ability to respond and provide coverage in non-hydranted areas should also be reviewed with a goal to obtaining a superior tanker shuttle accreditation by the Fire Underwriters. Achieving this accreditation should result in a significant improvement in insurance rates for many of the homeowners in the contracted fire protection area, and will enhance the Department's ability to fight structure fires in non-hydranted areas. However, it will require additional tankers to maintain the required water flow and possibly the development of a number of dry hydrants in various strategic locations.

A source for the additional tankers could be from adjacent departments and provision of these to fire scenes would be enhanced with an automatic aid agreement. This type of multi-department response would allow for greater numbers of firefighters and apparatus to be delivered to any particular emergency scene without each department having to budget for the required number of units. This multi-department response should be supported by a formal structure which better integrates and coordinates the operations of each of the area departments. Various examples of such integration – ranging from automatic aid structures, to full integration in the form of a sub-regional fire service – can be drawn upon by the District and CRD in any review of this issue. An enhanced level of functional integration would also better enable the development of further response capabilities, such as hazardous materials training (to an operations or technician level) to respond to risks along the transportation corridors in the area.

We found the Department to be efficient and well-run and at the same time very lean. It has little resiliency in terms of trained staff and resources which is a concern in light of an overall growth in its total emergency responses over the past number of years, and the considerable risks that it is expected to manage.

Service Mandate and Operational Authority

Overview

The Department has been continued under and operates pursuant to *Fire Services Bylaw No. 959, 2005* (the "Fire Services Bylaw"). The Fire Services Bylaw is the fundamental constitutional document which underpins the Department's establishment and defines its operational mandate and administrative processes. As a starting point, it needs to be recognized that fire departments are an optional service provided by local government.[2] Unlike police and ambulance, which are established under and/or operate pursuant to provincial statutes and have a uniform range of powers across the province, a fire department only has the power and authority granted to it under the local bylaw which creates and defines its operations. Outside of its operating jurisdiction – which, in the case of a municipal department, typically is the boundaries of the municipality[3] – a fire department has no specific authority to act at or to respond to an incident. Care must be taken, therefore, to ensure that the Department has the full range of powers needed to respond effectively to incidents within its jurisdiction; where it is responding outside of its ordinary jurisdiction, express consideration should be given to the source of the Department's powers to respond and operate – whether in a mutual or automatic aid agreement, under a fire service contract or in support of another emergency response agency, such as Wildfire Management Branch.

Similarly, there is no standard range of services defined for a fire department. A department is authorized to provide only those services which are stipulated in its bylaw. Given that fire departments are the only "all hazards" response agency available to local government, we recommend that both the grant of powers and authorization to respond to incidents be very broadly cast, but that their exercise be made subject to training and the availability of necessary personnel and equipment.[4]

The Fire Chief indicated that the Department had undertaken the initial steps to review the Fire Services Bylaw. The Department has gathered precedents from three other departments and conducted an initial review. Issues highlighted by that review include:

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[2] The only exception to this is the City of Vancouver, which is required to maintain a fire department pursuant to the terms of the *Vancouver Charter* (B.C.).

[3] For a fire service established by a regional district, the operational boundaries are those defined in the bylaw as the local (or specified) service area. In the case of the Department, it is the boundaries of the District of 100 Mile House, plus the fire protection area defined in the contract with the CRD.

[4] There may also be a need for additional authorizations to provide some services – for example, first medical response services requires appropriate training and certification and an agreement with the Emergency Health Services Commission.

1. The need to address hazardous materials responses;[5]

2. Strengthening the open burning bylaw provisions;

3. Developing a penalty or ticketing system for fire code violations which are not addressed in a timely fashion or, alternatively, correcting some oversights with respect to the language covering fees for re-inspections;

4. The need to clarify the Department's power to operate in the Fire Protection Area under the contract with the CRD; and

5. Updating the municipal fireworks bylaw.

We focused our review of the Fire Services Bylaw on matters directly pertaining to the establishment, operation, administration and powers of the Department. We did not review in detail certain of the related fire prevention bylaws (e.g., bylaws pertaining to the use of fireworks). Our comments on the Fire Services Bylaw should not be construed as, and do not constitute, legal advice. The District should review and confirm any comments in this report on its bylaws, agreements and occupational health and safety matters with its usual legal counsel. A mark-up of the Fire Services Bylaw has also been provided to the Department.

Definitions Section

Each of the defined terms specified in section 2.00 of the Fire Services Bylaw are capitalized; however, the use of such defined terms in the operative provisions varies. In some cases, the use of capitals is retained (e.g., "Fire Chief" and "Member"); in other cases it is not (e.g., "Incident"). In other cases, the defined terms are not consistently used – for example, the defined term "B.C. Building Code" is sometimes used; in other cases, a variation on the title of the code is written out (e.g., British Columbia Building Code).[6] It is better practice to adopt a consistent approach to the use of defined terms to ensure that the meaning of a particular term is clear and its application is intended in each operative provision where used.

Some other minor comments are as follows:

(a) In the term "Member", change the phrase "**that** is duly appointed" to read "**who** is duly appointed";

(b) The bylaw clarifies that any specific gender references cover all genders. This should be an operative provision (i.e., a separate section), not a defined term. The gender reference provision states that the bylaw will use the masculine gender, but this form is

[5] This issue includes making a strategic operational decision about increasing training levels from "awareness" to "operational", in addition simply to revising the Fire Services Bylaw.

[6] See, for example, sections 4.02 and 5.02

not consistently applied (see section 3.14). Consideration should be given to using what is now a more common formulation of referencing both genders wherever relevant.

(c) The defined term "100 Mile House Fire Protection Area" should be amended to "Fire Protection Area" (which is the form of the term used in section 3.06); and

(d) A defined term for "Standard Operating Guidelines" (or for "Operational Guidelines") should be introduced.[7]

Fire Department Operations

Section 3 of the Fire Services Bylaw covers a range of functional and operational matters including: the establishment and continuation of the Department (section 3.00); the manner of appointment of the Fire Chief and Deputy Fire Chief (sections 3.01 and 3.03); and the Fire Chief's responsibilities and authority (sections 3.02, 3.05, 3.07 and 3.08). This section also sets out the jurisdictional limits of the Department (section 3.06) and the powers of the Department to respond to, operate at and manage Incidents (sections 3.09 – 3.17).

With respect to the Fire Chief's authority and responsibility we would note as follows:

(a) In relation to section 3.02 we would recommend:

i. adding the phrase "or as otherwise directed by Council" to the end of section 3.02(a);

ii. broadening section 3.02(b) so that it reads: "for the protection of lives and property from fire **and other** hazards";

iii. in section 3.02(e), which deals with training, adding the following phrase at the end of the section: "in accordance with applicable standards, including those issued from time to time under the *Fire Services Act* (B.C.)";[8]

iv. reviewing section 3.02(g). This section suggests that Council is required to review and ratify all of the Department's operational guidelines, which seems somewhat impractical.[9] This provision also largely duplicates section 3.08; and

[7] The term "Standard Operating Guidelines" is used in section 3.06, but not defined in section 2.00; it usefully could be used in several other places in the Fire Services Bylaw, as discussed further in this section. When choosing an appropriate term, it should be noted that the Department's written procedures are actually titled: "Operational Guidelines".

[8] As discussed further below, under section 3(3)(b) of the *Fire Services Act* (B.C.), the Fire Commissioner is required to set training standards for fire service personnel in the province. The current standards have been set pursuant to a ministerial order dated December 2002.

v. reviewing section 3.02(i), which deals with the Fire Chief using the powers of a local assistant to the Fire Commissioner ("LAFC"). Under the *Fire Services Act* (B.C.), the fire chief in a municipality is automatically appointed as the LAFC, with the powers and responsibilities attendant on that position.[10] It would be preferable to note in the bylaw that the Fire Chief will be the LAFC and will exercise the powers and authorities of that position under and in accordance with the *Fire Services Act* (B.C.).

In addition, a section should be added requiring the Fire Chief to establish and maintain a system of regular inspections of "hotels and public buildings" in the District in accordance with the *Fire Services Act* (B.C.).[11]

(b) Section 3.07 makes the Fire Chief responsible for carrying out "all fire protection and assistance response activities and such other activities as Council and the District Manager directs". There then follows a list of the type of activities which are covered.

We would recommend splitting this section into two provisions. The first provision would retain the first part of section 3.07, and read: "The Fire Chief has complete responsibility and authority over the Fire Department subject to the direction and control of the Council and the District Manager to which he shall be responsible".

The second provision should expressly authorize the Department to provide various services, including: fire suppression; fire inspections; fire prevention and public education activities; hazardous materials responses; rescue operations; assistance to other emergency services (including other fire departments under mutual aid agreements, and police, ambulance, and the Ministry of Forests, Lands and Natural Resource Operations); first medical responder services in accordance with and subject to any agreement with the Emergency Health Services Commission under the *Emergency Health Services Act* (B.C.), as amended; and such other services as Council may, from time to time, direct or authorize.

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[9] It should be noted that the Department's policies for introducing, updating and/or revising its operational guidelines does not include any express provision for Council's review and ratification. See: OG #0.02.01, "Introduction: Operational Guidelines".

[10] *Fire Services Act* (B.C.), s. 6(a). The *Fire Services Act* (B.C.) is under active reconsideration by the Province, and amendments to this statute may be forthcoming in the next year.

[11] As required by sections 26 and 36 of the *Fire Services Act* (B.C.). There is overlap between the two provisions, and some confusing use of defined terms in the legislation, but the inspection obligation extends to: apartment houses, certain specified residential buildings, boarding houses, lodging houses, clubs, any other buildings (except a private dwelling) where lodging is provided, as well as: hotels, churches, theatres, halls or other buildings used as a place of public resort, factories, warehouses, stores, mills, schools, hospitals, theatres, public halls, office buildings and any building other than a private dwelling house.

An additional provision also should be added specifically recognizing that the Department is a volunteer service. Notwithstanding that the Department is authorized to provide a particular service, the revised bylaw should note that, in relation to any Incident (as defined in the bylaw), the Department will have no obligation to provide any service, or may limit the services provided, if, in the view of the incident commander, it lacks the personnel, equipment, apparatus or training necessary for the situation.

(c) In section 3.08, which essentially deals with the obligation of the Fire Chief to establish Operational Guidelines, we would recommend amending the phrase "establish rules, regulations, policies and committees" to introduce the concept of "Operational Guidelines" as follows:

> "establish Operational Guidelines and appropriate committees".

Also in section 3.08:

i. the District should consider limiting the responsibility of Council for reviewing and ratifying the Operational Guidelines of the Department. Council likely should only involve itself in major issues, such as an expansion or change of services provided or changes to extra-jurisdictional responses;

ii. the Fire Chief should expressly be made responsible for ensuring that the Department adheres to occupational health and safety requirements under the *Workers Compensation Act* (B.C.) and related regulations; and

iii. the phrase "efficient operations of the Fire Department" should be expanded to include the requirement that the Fire Chief establish training and proficiency requirements for members and Officers, and institute an appropriate incident command system and incident accountability system.[12]

Section 3.06 establishes the jurisdictional limits on the Department's operations. It permits extra-jurisdictional responses in certain specified circumstances:

- under contract or agreement (i.e., mutual/automatic aid, or contracted fire protection services);
- as established by the Department's "Standard Operating Guidelines";[13] and

[12] The Department is currently operating such systems. However, it is good practice to require these in the bylaw itself.

[13] The Fire Chief has indicated that the Department's current Operational Guidelines do not clearly stipulate the circumstances in which the Department will respond out of its jurisdiction.

- in connection with the provision of rescue services for motor vehicle incidents as authorized by the Provincial Emergency Program ("PEP").[14]

There also is a section authorizing the District's emergency program coordinator (or designate) to direct the use of "rescue and other equipment" in response to any "emergency situation that may arise within or without the District['s] …boundaries".

In relation to section 3.06, we would recommend that the Department establish a single operational guideline which describes the circumstances in which it will make extra-jurisdictional responses, with cross-references to individual guidelines that set out in greater detail the procedures to be followed for each such response. The following areas should be covered:

(a) **Wildfire Management Branch**: The District has a material wildland-urban interface ("WUI") risk, both within its fire service area and on the periphery. Under the *Wildfire Act* (B.C.), the Wildfire Management Branch ("WMB") is responsible for managing wildfire risks on Crown land.[15] As a matter of policy, it also will provide response assistance where wildfire occurs on private land in unprotected areas, or in support of local fire services within recognized fire protection zones – though in the latter case, primary responsibility remains with the relevant fire department.

Given the immediacy of the threat posed by wildfires, the WMB has a policy of authorizing local fire services to respond to events which are within the WMB's jurisdiction, but outside of the fire department's own jurisdiction. Historically, the WMB operated through individual aid agreements signed with local governments. However, since about 1999/2000, in place of such agreements the WMB has instituted a common "Standard Operating Guideline" that defines how it will work with local fire services.[16] As such, there is no "written agreement" *per se* under which the Department would be authorized to respond to a WUI incident outside of its boundaries in support of WMB.

The Department's operational guideline regarding wildfires (OG #4.03.01) essentially reproduces the WMB's operational guideline. The Department's operational guideline should be revised to stipulate that the Department will follow the WMB's operational

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[14] PEP will issue a task authorization number and reimburse fire departments at a scheduled rate, for responding to rescue situations at motor vehicle incidents outside of their ordinary fire protection area. The Department provides regional road rescue in the much of the south CRD, an issue discussed elsewhere in this paper.

[15] The Ministry of Forests, Lands and Natural Resource Operations is the ministry given authority over the *Wildfire Act* (B.C.); WMB is the operating division of this ministry which deals with wildfires.

[16] Ministry of Forests, Lands and Natural Resource Operations, *Wildfire Suppression with Local Governments: Standard Operating Guideline* (SOG 1.06.01). The most recent version that we have seen is dated 12 January 2012. See: http://www.miidonline.com/policy/OG-Wildfire%20Suppression%20with%20Local%20Governments%202012.pdf .

guideline (and attach the current version of SOG 1.06.01) and highlight: (1) who will authorize responding out of jurisdiction in support of WMB; and (2) how WMB resources will be activated or requested for WUI events within the Department's fire service area. The revised operational guideline also should provide for regular (annual) updates by the Department with the local WMB centre to ensure that the Department remains fully apprised of any provincial policy changes. Existing relevant provincial policies related to wildfire responses by structural fire departments are listed in Appendix 2.

(b) **Fires or hazards on the periphery.** There should be an operational guideline addressing responses to fires or other hazards or risks which are outside of, but proximate to the Fire Protection Area, and which pose, or may pose, a risk to the Fire Protection Area. Consideration will need to be given to the source of the Department's powers to operate at such events. These matters may usefully be addressed in the revised agreement with the CRD in relation to mutual aid.

(c) **Other extra-jurisdictional responses.** There should be an operational guideline stipulating how other extra-jurisdictional responses will be authorized (e.g., by the District Manager or his or her designate).

In relation to section 3.06(c), which deals with use of the Department's rescue and other equipment during an emergency declared under the *Emergency Program Act* (B.C.), we would suggest revising the language somewhat to more clearly state the preconditions required to activate this section (i.e., that an emergency has been declared). We also would suggest that section 8.01, which deals with mutual aid, should be moved up and made part of section 3.06. The mutual aid provision also should be broadened to include the potential for automatic aid as well.

Other Provisions

We had a number of other comments on the current form of the Fire Services Bylaw, as noted in the mark-up provided separately to the Department. One issue of substance that may be worth considering is a review of the existing inspections schedule (provided for in section 11.03, and set out in Schedule B to the Fire Services Bylaw). At present, regardless of risk, each inspectable property is subject to an annual inspection. It may be worth considering subjecting certain high risk properties to more frequent reviews (e.g., semi-annual), while lengthening the period for low risk properties.

In terms of enforcement powers, any revised bylaw should clearly stipulate the power and authority of the Department and its members to enforce the bylaw's provisions, and a process for imposing and collecting any fees, fines or other charges. Two immediate options exist:

(a) using the "municipal ticketing provisions" of the Community Charter[17] and enabling the Department to write tickets for various infractions; and/or

(b) setting out fees or charges for service for certain matters, such as re-inspections of commercial properties. Where those fees are not paid, the District should consider including the power to add the amount of the fees to the property taxes of the property.

The District also will need to consider how these powers will be enforced in the fire protection area of the CRD to which the Department provides service. This issue will need to be addressed in the fire protection agreement with the CRD.

Recommendation 1: The Department and the District should review and update the Fire Services Bylaw, as noted in the mark-up provided to the Department and outlined in the section above. Any revised Fire Services Bylaw should be reviewed with the District's usual legal counsel.

Operational Review

Overview

The operational portion of this review was conducted during the weeks of July 14th and 21st and consisted of onsite meetings with staff, several interviews with the Fire Chief, a review of the fire service area (including the CRD-contracted area), an inspection of the fire hall including all equipment and apparatus and a facilitated session with the volunteer firefighters. We would like to thank all of those who participated in the process for their professionalism and for their willingness to be frank and open when responding to our questions.

At the outset we would be amiss if we did not acknowledge Fire Chief Blades for his generosity of time and for his attention to detail in ensuring we had all the necessary information to conduct this review. The Department is a well-organized and professional organization of which the Fire Chief and all Department members should be proud.

Organizational Structure and Staffing

The Department operates with a single career member – its Fire Chief. Every other position, including the Deputy Fire Chief, Training Officer, Fire Prevention Officer, two Captains, Lieutenants (there are two positions: one is currently vacant) and 15 firefighters, is filled by

[17] *Community Charter* (B.C.), section 264. For a sample fire department ticketing bylaw, see: Powell River Regional District, *By-Law No. 373* [Consolidated]*: Being a by-law to control open fires on Savary Island* [2010?], at: http://www.powellriverrd.bc.ca/wp-content/uploads/BL373-Savary-Island-Fire-Control-Consolidated-20101.pdf.

volunteers.[18] In addition, the Department has access to a paid administrative assistant (notionally, one-half of an FTE[19]) when needed, although the individual's actual place of work is city hall. (The question of administrative assistance is discussed later in this report.)

Each position within the Department has a job description outlining the responsibilities and requirements of the role. According to the Fire Chief, all members of the Department are aware of the requirements for promotion to higher rank and are offered the training to qualify. In addition to educational and training requirements, the minimum service time in the Department required for promotion to an officer rank is three years.

The Fire Chief works a Monday to Friday 40 hour work week, not including overtime and call-outs. Our review of the Fire Chief's time sheets indicate that, over the past five years, he has worked an average of 583 extra hours (some 70 plus work days) of overtime each year. In line with other exempt staff, his compensation for this extra time is five extra vacation days a year. The Chief's responsibilities are currently considerably more than should be borne by a single position. As discussed further below, the Department needs assistance with (1) managing its training program (including the training facility); (2) managing its administrative functions and records keeping; and (3) meeting the mandated inspection schedule of commercial and multi-family properties, as required by the *Fire Services Act* (B.C.).

The Department operates a "Duty Officer" policy[20] to facilitate the availability of a senior officer to respond to emergency incidents outside of normal working hours. The Fire Chief is deemed to be the Duty Officer from 6:00 p.m. Sunday to 8:00 a.m. Monday and then from 4:30 p.m. to 8:00 a.m. throughout the work week (Monday to Friday). Weekend coverage is provided through a weekly rotation of the Fire Chief, the Deputy, the Training Officer, the Captains and Lieutenants. When POC member acts as weekend Duty Officer, he or she receives three hours of pay (at $24 per hour) for each 24 hour day served.

The Department budget includes funding for the Training Officer to work 4 to 5 hours per week to prepare for training sessions and manage the additional administrative work (presumably to maintain training records). The Department has found it challenging to maintain its training program using POC members, an issue that was commented on by the members during the

[18] In keeping with the accepted approach in the province, for the purposes of categorizing department members, paid-on-call ("POC") positions are treated as volunteer. All Department volunteers are POC, other than the Fire Chief.

[19] Full time equivalent position

[20] File No. 7200.01 – Fire Department Duty Officer Policy

facilitation. The Department used to have a part-time paid Training Officer, but the position was effectively eliminated several years ago.[21]

The Department also uses a POC member to fulfil the Fire Prevention Officer's role, which includes fire inspections, pre-fire planning and public education. The issue of fire inspections, pre-planning and public education are discussed in greater detail later in this report.

Of the 21 volunteers, the Fire Chief estimates there is a core group of 10 to 12 who respond on a regular basis and are fully trained and capable of safely conducting an interior fire attack. The Fire Chief would like to return the overall complement of firefighters to 28 POC members, to ensure an adequate response to emergency incidents and to prevent burnout of those responding on a regular basis. We agree with his assessment. The Department's call volume averaged 20 to 25 per month in the period from 2009 to 2013. It has been slowly increasing during this period (see the "Response Analysis" below) a trend that is likely to continue. There is a need to broaden the base of fully-trained responding members to ensure that a major incident (such as another fire at the OSB plant) can be managed, and to relieve the daily pressure on the core group of existing fully trained members.

Unlike the past when a fire chief commonly spent his entire fire service career within one department, today's fire chiefs have become considerably more mobile and have the opportunity to move to increasingly larger departments. To be clear – this is certainly no reflection on the current Fire Chief or on any discussions we have had with him; there is however a need to develop a formal succession plan for the position of Fire Chief and Deputy to ensure that their replacements have sufficient training and mentoring as command and administrative officers.

Conceptually, the Department's organizational structure is sound and is consistent with many similar sized departments we have reviewed throughout the province. Areas where the Department can be seen as more challenged, both operationally and administratively, arise from having only a single career member. Each of these areas will be discussed in greater detail in their respective sections of the report.

Recommendation 2: That the Department hire a fulltime Deputy Fire Chief to act as the Training Officer, carry some of the fire inspection load, assist the Fire Chief with his duties and take over the Fire Chief's role in his absence.

[21] The Training Officer position was for three days/week at the Department and two days/ week at Public Works (in a relief capacity). The position existed from the autumn of 2005 until about 2010. When the employee took a fulltime posting at Public Works, the position was not refilled.

Recommendation 3: That the Department develop and implement a formal succession plan, which identifies each officer position, including its roles, responsibilities and training and experience requirements.

Recruitment and Retention of Volunteers

The recruitment and retention of volunteer firefighters has become one of the principal challenges facing the fire service in British Columbia and across Canada. The difficulties surrounding the recruitment and retention of volunteers was specifically identified as an issue in the Fire Services Liaison Group report, *Public Safety in British Columbia: Transforming the Fire Service* (2009),[22] and has universally been identified as a problem by each of the volunteer-based services with whom we have worked over the past decade or more.[23] The Department is facing significant challenges in this area and has been trying unsuccessfully for several years to increase its overall membership. Instead, it has only been able to maintain its existing numbers, when factoring in attrition.

The problems facing the recruitment of volunteer firefighters are manifold and include:

1. The time commitment required to meet the training and qualification standards required of a firefighter has significantly increased since the 1970s and 1980s. The discussion of training issues in this report aptly illustrates how challenging it can be to train firefighters to the mandated standards. It can take as much as two to three years to train a volunteer firefighter to NFPA 1001 standards and the time involved in meeting the on-going skills maintenance is significant;

2. It is more challenging to attract new candidates. The reasons vary but include: changing demographics (an "aging population"); increasingly transient populations; a change in the overall level of "volunteerism"; and changes in work patterns, where families have both parents working (sometimes in multiple jobs) to make ends meet. The Department faces an additional challenge in that the population base from which it draws its volunteer complement is relatively small. The Fire Chief noted that the community's demographics are increasingly moving towards a "retirement" age population and that many of the younger residents move away for better economic or educational opportunities;

3. Even where volunteers have successfully been recruited, business-day responses are weak, as employers are less willing to allow their employees to leave work to respond as

[22] The report examined the challenges facing the fire services generally in the province. See recommendation 4, on pp. 20 ff.

[23] While the experience varies with department, even those which are "doing well" identify that recruitment and retention of volunteers is a significant issue for them, which demands increasing time and attention from the fire services management team.

a member of the local fire department or the members are working at jobs outside of the community and are unable to provide a timely response; and

4. Fire chiefs and fire officers have been increasingly tasked with more burdensome administrative and training requirements. They have less time available and often lack the skill sets required to develop and maintain a successful recruitment process in light of the challenges which have developed in this area.

In much of British Columbia, reliance on volunteer responders is both an economic and operational necessity. The costs of maintaining a career department are simply too great and cannot be supported by the economic base or justified by the call volume. Given its circumstances, the Department will be dependent on volunteers for the foreseeable future. Faced with the necessity of maintaining an adequate number of volunteers, and the challenges of so doing, local governments – both at the municipal and regional district level – and fire departments must become more innovative in their approach to this issue. It can no longer be viewed as just a challenge for which the fire department has sole or even primary responsibility. Rather, the problem must be treated as one which is addressed in a coherent fashion by local government and the fire department acting in tandem.

In the Department's current system, the Fire Chief is primarily responsible for recruitment. He has found the recruiting process to be a significant challenge and the Department has been struggling for several years to increase its membership to a more optimum size.

The existing approach to recruitment needs to be reviewed. The District (with the assistance of the CRD in the Fire Protection Area) needs to become more proactive in seeking volunteers for the fire service, if that service is to be maintained. The municipal governments need to assist the Department with developing and managing an effective public relations / public information campaign to attract and retain new members.

Some specific issues to be considered include the following:

1. Reviewing remuneration practices for volunteer members;

2. Ensuring that the appeal for new members is as broadly-based as possible;

3. Developing and implementing the concept of "duty crews";

4. Working with employers in the region (including the municipal governments themselves) to encourage volunteers from amongst their employees and to permit those employees to respond to day-time calls;

5. Developing an effective and proactive recognition process that acknowledges the contribution of the volunteers (and their families) and the employers who participate as partners;

6. Reviewing the possibility of implementing a "Work Experience Program"; and

7. Hiring at least one person to assist with the Department's administrative and other requirements.

Each of these issues is considered below.

Compensation

In our experience, people do not join their local volunteer fire department with the thought of financial gain; rather they do so to serve their community and to provide protection to their families and their neighbours. Based on our discussions with the members at the facilitation session, there was general agreement that the pay rate for practices and responses was considered good. At the same time, it is useful to review with the members whether the compensation they receive for the time commitment required is sufficient to ensure members are not out-of-pocket as a result of time spent training or providing services to the Department, and are adequately compensated for any day-time responses, if those responses result in a loss of wages. It also is important to review how the Department manages its essential administrative functions and to ensure that members are compensated if they actively and regularly provide such support services.

One issue that was identified during the facilitation was that access to some level of benefits (e.g., extended medical and/or dental) would be of more interest to members than a change in pay rates, and may enhance recruitment.

Recruitment Processes

Fire departments need to attract recruits from the broadest possible range of candidates. They also need to make effective use of both traditional and new media, to be aggressively proactive in getting their message out. It is critical for both the District and the CRD to assist the Department in these efforts, both by helping to develop and implement any media campaign, as well as by clearly and effectively conveying to the public and to employers the need for volunteer members and the benefits that accrue to the community as a whole from active participation.

Some volunteer departments have also taken to recruiting new members specifically to assist with administrative or support functions. They have found that there is a willing group within their communities who would like to help, but not as active emergency responders. While there is always turn-over (or the potential for turn-over) in volunteers, the Department may wish to consider whether they could attract individuals interested in helping principally with such administrative tasks.

"Duty Crews" and Employer Participation

These concepts, in some respects, are inter-linked. One of the issues facing all volunteer departments is that weekday business-hour responses are typically very low. The problem increasingly has become one where employers, which traditionally would permit a volunteer

firefighter to leave work to respond to an emergency, are no longer willing to do so. In some cases, it also is an issue for the volunteer who may not be able to afford to lose his or her pay for the time required to respond to a call. The problem is made more challenging in the Department's fire service area, as it is primarily a residential community.

There are no magic solutions to these issues. Some approaches which should be considered include:

1. Implementing a duty crew system – for example, each member who is able, commits to responding during a specified time frame each month (e.g., one week per month) during business hours. Under this arrangement, an employer would know that his or her employee would only be responding during business hours one week per month. The concept can be refined to limit the types of calls that would go out to duty crews (e.g., to structure fires or other "major" incidents), thereby limiting the number of times per week that a day-time response will be required. The Department is already using a "Duty Officer" program to ensure rotating weekend coverage by an officer: a similar concept could be used to create duty crews for weekday operations.

2. Rewarding the employer for participation. This reward can be tangible (e.g., a rebate on business licence fees), intangible (express public recognition by the District and/or CRD of the employer's participation – including a plaque or signage for the business, an awards dinner, media release by local government, etc.) or a combination of both.

3. Ensuring that volunteers are not directly "out of pocket" for responding. Some jurisdictions provide wage-loss compensation (in place of regular remuneration for a call response). We recognize this could be expensive: it would require detailed study and review before implementation (and may not be an issue, given the input received from members during the facilitation regarding compensation).

Recognition

The time and cost of training up volunteers makes retention efforts as critical as recruitment. Appropriate recognition of the volunteers, and their families, is critical to ensuring their retention. Similarly, a well-developed and focused recognition of local employers who participate as partners will help to encourage participation from businesses. Recognition events need the active support and participation of all levels of local government, including elected representatives, to be fully effective.

One of the issues flagged during the facilitated session was an impression on the part of members that the District was not actively recognizing their commitment. It was noted that recognition events for Department members had to be organized by the members themselves (and were therefore just an additional time commitment).

Work Experience Program

One option that may assist in addressing the Department's endemic staffing shortage is the introduction of a "work experience program" ("WEP"). In British Columbia, the creation of WEPs has principally been spearheaded by mountain resort communities, such as Big White, where small permanent populations combined with large, seasonal influxes of tourists and some material fire and other hazards, posed unique challenges. On the one hand, there are significant fire and other risks which make a fire service essential; on the other, there is a limited population base and limited tax base (and enormous seasonal fluctuation), which makes it difficult to sustain either the traditional POC/volunteer or composite/career model for a fire service. Under a WEP, the local department provides accommodation and either a small stipend or a job.[24] WEP appointments typically lasts for 10 to 12 months and applicants must be fully NFPA 1001 qualified for consideration. While there are various ways to structure the system, the goal (for a typical volunteer department) would be to improve day-time responses by fully-trained members. For the WEP members, the aim is to acquire a broad range of practical experience and additional training, to assist with their application for a career position in a larger department.

The challenges faced in maintaining POC/volunteer staffing levels in small municipalities has meant that WEPs are now actively being considered or implemented by non-resort communities.[25] In the medium term (three to five years), the District should explore the possibility of introducing a WEP as a partial solution to its endemic staffing issue. The roll-out of such programs in other communities should be monitored and reviewed and a program should be considered for implementation in the District. The issue of providing or arranging accommodation for the WEP members would require fire hall modifications.

There clearly will be an additional cost to operating a WEP[26] and the Department will require additional administrative support to ensure that such a program is properly managed and overseen. The benefits will be a significantly improved business-day response and the availability of an additional cadre of NFPA 1001 trained firefighters.[27]

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[24] Typically, in resort communities the WEP members are also hired as staff members at the resort.

[25] The Town of Creston is expecting to roll out a WEP in autumn 2014.

[26] Under the Creston program, WEP members receive accommodation, pay for call responses, standby pay and an annual stipend of $1800 ($150/month) for expenses as well as free access to municipal gym and pool facilities. Members are expected to commit to a 12-month program, work a regular day-time shift Monday to Friday and are on-call on a rotating basis on the weekends. Educational and training opportunities are provided during their service period.

[27] One of the tasks often assigned to WEP members is responsibility for assisting with the training of the POC members.

Recommendation 4**:** The Department and the District should develop a comprehensive approach to recruitment and retention including developing an effective information campaign for volunteers, reviewing the idea of volunteer benefits and implementing a duty crew system.

Recommendation 5**:** The District should develop and implement a more effective recognition program for its volunteers. It also should develop a recognition program for employers, and in particular for those employers which permit their employees to respond to day-time call-outs.

Recommendation 6: The Department and the District should review other WEPs in the province, and consider developing and implementing a similar program. A WEP would enhance day-time responses and improve the availability of emergency responders, at a far lower cost than hiring career firefighters.

Fire Prevention

The general topic of fire prevention services can be broken down into three separate issues: fire inspections; public education; and fire investigations. Of the three, fire inspections and fire investigations are the only required services the Department must provide,[28] although it should be noted that public education is seen as equally important by many in the industry. Public education also figures prominently in reviews conducted by the Fire Underwriters (see discussion later in this report). A fourth function, pre-fire planning is often a role conducted by Fire Prevention. In the case of the Department, however, its ability to conduct pre-fire planning is limited due to resource constraints. To address this issue, the Department hired a summer student to convert some of its existing paper-based, pre-plan information into an electronic format. This conversion will assist with the development of proper pre-plans for major risks in the community.

Responsibility for fire inspections lies primarily with the Fire Chief who is assisted by the Fire Prevention Officer (the "FPO") and one other POC member. The FPO is a volunteer member who also serves as an active firefighter in the Department, and as such must devote much of his time to firefighter training.

There are approximately 380 properties within the fire protection district that require inspection. A number of the properties are considered "high risk" and should ideally be inspected twice per year. The FPO has been assigned 120 of the 400 properties – primarily the "low risk" buildings. This leaves the remaining 280 for the Fire Chief and other POC member. According to the Fire Chief, the FPO is struggling to complete his inspections while at the same time maintaining his

[28] Fire inspections within municipalities are a requirement under the *Fire Services Act* (B.C.).

other obligations (including a full time job, his firefighter training and maintaining some semblance of family life). This is a common problem for many volunteer departments.

Properties that fail during the initial inspection must be re-inspected to ensure compliance. This process of re-inspection is time consuming and can often occur several times for a single property (often nearly doubling the workload). The following table shows the fire inspections conducted in the four year period between 2010 and 2013.

Year	Inspectable Properties	Total inspections	Primary Inspections	Re-inspections	Other
2010	~380	319	179	137	3
2011	~380	409	250	158	1
2012	~380	510	303	207	14
2013	~380	407	225	168	14

Table 1: Fire Inspections 2010 to 2013

At the present time, the Department does not charge fees for either inspections or re-inspections, even though charging a re-inspection fee is permitted in the Department's Fire Services Bylaw.[29] Serious consideration should be given to correcting the bylaw structure to enable the Department to charge non-compliant properties a re-inspection fee. The risk of a ticket or charge for re-inspection will encourage property owners to comply with applicable fire prevention practices and help the District underwrite the costs of re-inspections.

The Fire Chief noted that the Department conducted over 400 inspections and/or re-inspections in 2013. However, the 407 inspections/re-inspections only accounted for approximately 60% of the total inspectable properties within the District. In other words, 40% or some 155 properties were not inspected during that year. This is an area where the Department needs additional resources to meet its statutory mandate.

Records for fire inspections are maintained in the FDM Records Management System and, according to the Fire Chief, are up-to-date. The data entry used to be performed by the District's administrative assistant (working from city hall); most of it now is entered by the Fire Chief. The Department budget contains a line item for one-half of an FTE for the administrative assistant's time although there is a sense that they are not getting the amount of time that is allocated to their budget. The Department and Public Works used to share an administrative assistant who was based out of the Public Works/Fire Hall complex. This position was relocated to Municipal Hall and the duties of the employee have shifted to the point where a majority of the time is actually a finance position. The Chief notes the Department could use a half-time employee and would prefer that the person be located at the fire hall.

[29] There apparently is a technical problem in how the Fire Services Bylaw connects (or fails to connect) with the District's fees and charges bylaw.

Fire Investigations are primarily the responsibility of the Fire Chief. In addition, the Office of the Fire Commissioner is available to assist or at least advise local jurisdictions with fire investigations. The District has not had a lot of large structure fires that have resulted in the need for lengthy fire investigations recently, so this is not seen as a problem area. The Fire Chief is the only active LAFC in the Department.[30]

The Department undertakes a limited amount of public education in the context of attending local community events, school visits and annual school evacuation drills. There is no formal public education program in place and the Department would be hard pressed to conduct any given the pressures on their staffing.

Pre-fire planning, which can also be described as "building familiarization", is a process of preparing to fight fires in specific buildings. Pre-planning involves an assessment of the particular structure including identified points of entry, water sources, power and gas shut-off locations and risk identification. Proper pre-planning significantly enhances both firefighter safety and the effectiveness of any emergency response. Access to appropriate pre-plans is a critical tool for incident commanders faced with a major structure fire or other emergency. It also is a factor which is taken into account by the Fire Underwriters when they assess a Department's capabilities.

According to the Fire Chief the Department has conducted pre-plan inspections on approximately 80 of some 380 properties. However, at this time the available information has not yet been entered into the FDM system and therefore is not available to crews responding to incidents. As noted above, a test project is currently underway to have summer students input the information and continue with the data collection. We congratulate the Department for this innovative approach and encourage them to continue developing their Pre-Fire Planning Program.

Recommendation 7: The Department should be provided with part-time administrative assistance at the fire hall to assist with administrative, record keeping and data entry duties. The existing ½ FTE position should be maintained but the individual should be based at the fire hall during the portion of the day (or for the days of the week) during which work for the Department is being performed. The need for further administrative assistance would also need to be reviewed if a WEP is introduced.

[30] It should be noted that there are two other members of the Department who have the LAFC designation; however they both received their appointments a number years ago and are no longer actively conducting fire inspections for the Department.

Recommendation 8: The Department create a fulltime career Deputy Chief position to undertake all aspects of fire prevention and to assist with training, administrative and other requirements.

Recommendation 9: The Department review its fire inspection schedule and consider re-drafting it based on risk. Inspections on higher-risk properties should be increased; consideration can be given to reducing inspections of low risk properties.

Recommendation 10: The Department start charging fees for all re-inspections and that the fees escalate in cost for each additional re-inspection required for the same property.

Records Management

One of the most significant changes in requirements for fire departments in recent years has been the increased need to create and maintain thorough records of department operations, maintenance and training. Meeting these obligations is necessary to ensure that the Department can properly manage its operations, to improve member safety and to limit liability concerns for both the Department and the District.

The critical nature of proper records keeping was made evident in the accident investigation report conducted by WorkSafe BC into the 2004 line of duty death in Clearwater. In that case, a 23 year old volunteer firefighter, Chad Schapansky, died during an interior attack at a restaurant fire. The WorkSafe BC investigation noted, among other things, that:[31]

- the Clearwater department lacked written operational guidelines governing interior attacks;
- neither the Fire Chief nor the Deputy Chief could prove that they had accredited incident command training;
- the Clearwater department could produce no training records for accredited training done by the interior attack team, rapid intervention team or fire officers in charge;
- there was no documentation proving that the self-contained breathing apparatus ("SCBA") equipment had been serviced or repaired by qualified persons, and the records themselves had not been maintained in accordance with the required standards.

The Consultants reviewed a sampling of the available Department records covering training of its members. Currently, Department training records are either maintained in the computerized FDM system located at the dispatch centre in Prince George or available locally in hard copy

[31] The WorkSafe BC accident investigation report was completed 26 April 2005; references to this report are drawn from the B.C. Coroners Service, "Judgement of Inquiry into the Death of Chad Jerry Schapansky," 2 February 2006 (the "Schapansky Inquiry"), at pp. 4 - 5.

files. The Department's training records were available for review and from our sampling review appeared to be substantially complete. The Department is to be congratulated as this is one area where, in our experience, many departments are found lacking. This being said, ideally, having all the records in the FDM system would make them more easily available. Our understanding is that this is the goal once new training reports, which are currently under development in Prince George, are completed.

Samplings of equipment maintenance records were also reviewed and found to be in good order; however we did not have an opportunity to review apparatus maintenance records as they are kept off-site but were assured by the Fire Chief that they were also in good order. Given the accuracy of other required records we did view, we have no reason to question this.

In Appendix 4, we have set out an overview of the records which fire departments generally must or should keep in order to meet their statutory, regulatory and operational requirements. The Department should review those requirements and ensure that it is maintaining all of the required records.

Fire Hall Facilities

The Department operates out of a single fireball located at 385 Horse Lake Road. The hall is centrally located within the District. The building was originally constructed in 1979 with an addition consisting of two apparatus bays added in 1999. The building consists of six apparatus bays, four of which are drive-through style. It should be noted, however, that when the addition was built in 1999 the front and rear apparatus bay doors were not aligned with each other which results in the need for considerable care when maneuvering in and out of the hall.

The building consists of a combined office dispatch room, fire chief's office, a lounge meeting/training area, a small kitchen off the meeting area, a small fitness area (on the mezzanine – not ideal), male and female washrooms (there are no shower facilities in the female washroom),[32] and a bunker gear storage area. A small workshop area and wash-up area are located off the apparatus bay floors.

Overall the building appears to be in reasonable condition and to be maintained in accordance with standard practice. According to the Fire Chief there is no replacement plan in place within the foreseeable future (20 years plus). The Fire Chief reports that there have been no major structural issues with the building and while they have some concerns about the overall size (in particular, from the lack of space), replacement or expansion of the building is not a high priority for the Department at this time.

[32] The Department would like to convert the existing washrooms into three, separate unisex washrooms containing a sink, shower and toilet. These renovations have not yet been budgeted for and some fundamental renovation planning would be required to determine what would be required to effect such a redesign.

Minor maintenance for the building is performed by the firefighters while major maintenance such as roof repair is contracted out to local builders.

Several issues were noticed during our inspection, some of which are considerations for the future when the building is replaced or expanded and some of which are relatively easy fixes in the current building. They are as follows:

1. Lack of a hose tower – the original building was constructed without a hose tower and plans for including a hose tower in the 1999 expansion were dropped. Hose towers serve a dual purpose of a place to hang hose to dry and also as a platform for training evolutions.
2. Limited office space – currently the building contains two offices and one area designated as a dispatch area/office. The addition of at least one more designated office space is appropriate.
3. Fitness Area – the current fitness area is atop the mezzanine and has very limited head room. There is a risk that members will strike their head as they enter or exit the area. A more appropriate fitness area should be found or modifications of the existing space undertaken.
4. Turnout Gear Area – the current turnout gear storage area is open to the apparatus bay. While the apparatus bays do contain vehicle exhaust extraction units, modern day construction standards from the NFPA recommend that turnout gear storage areas should be separated from other portions of the building, especially the apparatus floor (to prevent contamination by particulate matter from diesel exhaust).
5. The rear gravel fire hall apron – the fire hall apron consists of a gravel base which is not ideal for training.
6. Lack of emergency power – the fire hall has no backup generator to supply emergency power during a power outage. This can be an essential issue during power outages which are quite often directly related to emergency responses. The Fire Chief reports having had several power outages in the last six months, which has elevated their concern over this issue.
7. Lack of reception area – the building lacks a reception area where the public can interact with the Department. Currently anyone entering the building enters into the members' lounge area.
8. The SCBA wash area – the current SCBA mask washing area is a sink located adjacent to the apparatus floor. While the volunteers may understand that it is only for SCBA equipment, there is nothing to prevent a member of the public or a contract worker from thinking it is a wash basin for anything including tools, paint brushes, etc. Ideally a better location should be found but, alternatively, proper signage should be erected.

Recommendation 11: That the Department install an adequately sized generator to provide the fire hall with an emergency supply of power during power outages.

Recommendation 12: The Department undertake a formal review of the existing facility and the Department's anticipated needs over the next ~10 years, and include plans to upgrade and improve the space in the medium term budget cycle.

Fire Department Apparatus

The Department's existing apparatus is listed in the following chart.

Cad ID	Type	Year	Make	Pump Capacity GPM	Tank Capacity Gal.	ULC Number
Engine 11	1st Due	2009	Hub	1250	850	136023
Engine 12	2nd Due	1996	Superior	1050	1000	12C
Tender 11	Tender	2006	ERS	1050	2500	6015
Brush 11	Wildland	1991	Pierce	300	200	N/A
Rescue 11	Rescue/Medical	1999	Superior	N/A	N/A	
Squad 1	Duty Officer	2008	Ford Ranger	N/A	N/A	
Squad 2	Crew/Prevention/Training	2012	F-150	N/A	N/A	

Table 2: Apparatus

The Department has four major pieces of apparatus and is facing the need to replace at least one of these vehicles in the next two years. The useful lifespan of fire apparatus is determined, in large part, by the Fire Underwriters Survey (the "FUS"), which specifies:[33]

Age	Major cities	Medium sized cities or where there is significant fire risk	Small communities & rural areas
0-15 years	First line	First line	First Line
16-20 years	Reserve	Second Line	First Line
20-25 years	No Credit	No Credit *or* Reserve	No Credit *or* Second Line
26-29 years	No Credit	No Credit *or* Reserve	No Credit *or* Reserve
30 years +	No Credit	No Credit	No Credit

Table 3: FUS Fire Apparatus Lifespan

Under the FUS system, the District would be classified as a "small sized" community.

The Department has one piece of apparatus which is nearing the twenty year age limit: Engine 12 entered service in 1996. The Department's wildland vehicle, which entered service in 1991, and Rescue 11, which entered service in 1999, are not directly affected by FUS requirements and can continue in service provided they remain mechanically and operationally fit for use. It should be understood that we are not suggesting that Rescue 11 should not be replaced but are merely pointing out that it is not a requirement under the FUS.

The Fire Underwriters do permit departments in small to medium–sized communities to apply to extend the grading recognition status of older apparatus. In that regard, they note as follows:[34]

> "Exceptions to age status may be considered in a [*sic*] small to medium sized communities and rural centres conditionally, when apparatus condition is acceptable and apparatus successfully passes required testing."

[33] Fire Underwriters Survey, *Insurance Grading Recognition of Used or Rebuilt Fire Apparatus* (2007), at p. 3 (hereafter: FUS, *Apparatus Recognition)*.

[34] FUS, *Apparatus Recognition*, p.3, note 2.

Under the FUS system, it appears that the testing required is an annual "Acceptance Test" as specified under NFPA 1901, *Standard for Automotive Fire Apparatus*. By utilizing this approach, it may be possible to extend the lifespan of a particular piece of apparatus by a further five years (so that replacement does not occur until the apparatus is 25 years old).[35]

Some caveats should be noted. FUS requires that municipalities which wish to extend the usable life-span of their apparatus to make application to FUS; they also appear to reserve the right to refuse to grant credit to such vehicles:[36]

> "Due to municipal budget constraints within small communities we have continued to recognize apparatus over twenty years of age, provided the truck successfully meets the recommended annual tests and has been deemed to be in excellent mechanical condition."

They go on to note, however: [37]

> "Apparatus exceeding 20 years of age may not be considered to be eligible for insurance grading purposes regardless of testing. Application must be made in writing to Fire Underwriters Survey for an extension of the grade-able life of the apparatus."

There are, however, obvious risks in attempting to extend the life of fire apparatus beyond ~20 years. Although actual mileage on these vehicles tends to be relatively low, their usage is extreme: they always travel fully loaded, and in responding to any emergency call, typically are significantly stressed by each use.

Apparatus maintenance within the Department is conducted by the District Public Works Department Mechanic who also is a volunteer member with the Department. He is a certified Emergency Vehicle Technician and has qualifications as a certified Vehicle Inspector in addition to several other specialized certifications. The Department is fortunate to have such a member within their ranks.

In the past, annual pump tests have been conducted by an outside agency but will now be conducted in-house. Overall the apparatus appeared to be in good condition and well maintained.

One gap in the Department's complement of apparatus is the lack of an engine designed to provide an elevated water stream. Examples of such elevated apparatus include aerial ladders, telesquirts, platforms and quints. While each of these apparatus can provide numerous rescue options, their primary purpose is the provision of elevated water streams during fire operations.

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[35] FUS, *Apparatus Recognition*, p. 5, table 2.

[36] FUS, *Apparatus Recognition*, p. 2

[37] FUS, *Apparatus Recognition*, p. 5, table 2, note 4.

Effectively managed, an elevated water stream can take the place of several firefighters (for example during a time of low volunteer turnout) during a large structure fire.

While it should be noted that the Department is not currently required by the FUS to have an elevated device,[38] the District does have several three storey wood construction apartment buildings in addition to several large (and high-risk) commercial and public buildings (including the OSB plant, log mill, schools and the hospital). Managing a major fire in any of these buildings would certainly be made easier and safer by the availability of an elevated stream apparatus. Several examples of departments operating both quints and/or telesquirts as pumper companies can be found throughout the province. The advantage of this response scenario is that for 95% of the time the apparatus is dispatched and operates as a pumper company; however when the need arises for an elevated stream device, the device is already on scene and available to the fire crews.

It should be noted that an elevated stream apparatus will be more costly than a regular pumper unit. It also will carry with it special training requirements. The acquisition of such a device should be carefully planned.

The Department's apparatus replacement fund is currently capped at $750,000. According to the Fire Chief, the cap was imposed by the District and has not been determined according to actual vehicle replacement costs. The replacement fund is financed through contributions from the District and pre-determined capital contributions from the CRD made in accordance with the existing Fire Service Contract (see discussion below). The creation of this capital fund by the District is to be applauded, though we would recommend that the cap be more directly correlated to the anticipated replacement cost (and timing of replacements) of the principal apparatus in the Department's fleet.

Recommendation 13: That the Department in conjunction with the District should investigate the feasibility and potential operational advantages of purchasing an elevated stream apparatus as part of its apparatus replacement program.

Recommendation 14: That the Department in conjunction with the District develop and cost out a long range apparatus and equipment replacement plan to ensure that funding will be available when expenditures are required.

[38] As noted in the section analyzing the Fire Underwriter requirements, there has not been a review in over 30 years. In any subsequent review that may be conducted, it is likely that the need for an elevated stream will be highlighted.

Training

Overview of Training and Training Standards

Volunteer fire departments form the backbone of the fire service across the country. Of the approximately 350 departments in British Columbia, some 75% of them are "volunteer" (which includes pure volunteer, paid-on-call and composite departments where the majority of the membership is either volunteer or paid-on-call). The FSLG report noted that most volunteer departments are suffering from constrained funding and facing significant challenges in the recruitment, retention and training of volunteer firefighters. Additional regulatory requirements and increasing potential liability have made the operation of a volunteer department more difficult, demanding and expensive than in the past. In many respects, the challenges faced by the Department are a microcosm of the challenges identified in this report.

Given that the principal mandate of fire departments in the province, and in particular that of the Department, is to provide fire protection, the primary focus of this review is on the training required for the members to conduct fire suppression operations safely, effectively and in accordance with statutory requirements. The fire service has made significant changes over the past 10 years, particularly with regard to regulations and standards related to managerial and administrative aspects of the service (such as the increased requirement for record keeping). Notwithstanding those improvements, the key component to ensuring effective emergency incident operations and the safety of firefighters, as well as members of the public, continues to be effective and comprehensive training.

The need for proper training has never been greater. The nature of modern construction techniques has amplified the risks faced by firefighters and the public. Lightweight construction components and contents made of composites, synthetics and other unusual fuels, cause fires to burn hotter, faster and with less predictability, creating a much more volatile fire environment than that of the past.[39] Although firefighters are now better equipped, fires today pose a greater risk than those faced in the 1970s and 1980s. Having recognized this, the fire service is now placing a much greater emphasis on firefighter safety, with a particular focus on interior operations, and seeking to better manage the degree of risk to which firefighters are exposed. This is achieved by increased levels of comprehensive emergency incident training – the knowledge and skills required to perform all necessary functions at emergency incidents safely and effectively.

[39] For a comparison, see: http://vimeo.com/80730910 where two videos have been uploaded of test fires. The first comes from Underwriters Laboratory Firefighter Safety Research Institute, and tracks the propagation of a fire in building furnished with legacy materials. The comparison video was prepared for a study conducted by the National Institute of Safety and Technology in cooperation with the Chicago Fire Department.

The Province has established the training standards applicable to the fire service under the terms of a ministerial order issued pursuant to section 3(3)(b) of the *Fire Services Act* (B.C.) (the "FSA"). The Minister's Order reads as follows:[40]

> "Further to the authority granted by Section 3(3) (b) of the *Fire Services Act*, the training standards for fire service personnel in British Columbia are those published by the National Fire Protection Association, effective January 1, 2003. Previous editions of the British Columbia fire service training standards are hereby rescinded."

The Minister's Order, therefore, sets NFPA standards as the basis for fire service training. It is our view that, based on the language of the FSA and the order itself, the requirement is mandatory for local governments.[41] It is worth noting that the Minister's Order does not specifically provide that all firefighters must be NFPA 1001 qualified before serving on the fire ground. We believe what is required is that, before performing a particular task or evolution, the individual in question must have been trained to the appropriate NFPA standard for that task or evolution. It is then the responsibility of the incident commander to ensure that firefighters are tasked only with those functions for which they have been trained.

The uncertainty surrounding the interpretation of the Minister's Order has led to its active reconsideration by the Office of the Fire Commissioner. It is expected that a new training standard will be promulgated in the autumn of 2014. Our understanding is that the new standard will still be based on NFPA requirements, but will better enable departments to design their training programs to meet each department's service mandate. As a corollary, local governments will have to specify what service level they expect of their departments and firefighters, and fund training accordingly. Based on comments from the Fire Commissioner, we expect to see the mandate divided into three broad categories:

- exterior (defensive) only;
- interior (offensive); and
- full service (essentially NFPA 1001 FFII).

There also would be separate certifications required for specialty services (e.g., different aspects of technical rescue, auto extrication, etc.).

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[40] Minister's Order M368, 18 December 2002.

[41] An interpretation bulletin was issued by the Office of the Fire Commissioner in 2012 which interpreted the Minister's Order differently: Emergency Management B.C., "Information Bulletin: Minimum Training Standards for Firefighters in British Columbia" (30 November 2012). This interpretation was incorrect; the bulletin has now been rescinded.

The issue of appropriate training levels must also be considered in light of WorkSafe BC requirements and the obligation of employers to ensure that their workers are adequately trained for their duties and properly supervised while performing them.[42] An employer that fails to train and supervise its employees properly is in breach of the *Workers Compensation Act* (B.C.). To ensure operational effectiveness, meet occupational health and safety requirements and mitigate potential liability, it is vital to ensure that all firefighters are trained to the appropriate level for the operations which they undertake. The goal, therefore, should always be to maximize training for all firefighters, and to limit their emergency incident operations to those tasks for which they have been properly trained. To accomplish this, a department must also ensure that all firefighter activities are always supervised by a properly trained fire officer.

The two key areas of training required to ensure that a fire department will function effectively and safely, and meet today's accepted fire service standards, are:

- the operational skills that pertain to emergency service delivery – the various firefighting and rescue skills along with emergency incident management skills; and
- the skills that pertain to the day-to-day non-emergency leadership and supervision of members and the effective administration and management of the organization.

Aggressive interior operations, such as fire attacks and primary searches, require firefighters to enter a life-threatening environment. These operations dramatically increase the risks from adverse fire events such as flashover, smoke explosion or backdraft, along with exposure to a variety of other perils, thereby posing the most significant risk to firefighters in emergency operations.

A line of duty death or serious injury is a risk that all fire departments must seek to avoid. In the event of a serious injury or line of duty death, the impact on the individuals involved, their families and the department can be severe and long lasting. There is also a significant potential for liability for the department, its officers and the relevant local government.

There are a series of recommendations that flow from the analysis and discussion below. Those recommendations are set out at the end of the section.

Department Training

The following evaluation of Department training was conducted in the context of a review of background material and training records, discussions with the Fire Chief and information

[42] See sections 115 and 117 of the *Workers Compensation Act* (B.C.), as well as Part 31 of the *Occupational Health and Safety Regulations* (the "Regulations") made under that act. There are also particular obligations on employers to ensure that new workers are adequately trained for tasks which they required to perform. See sections 3.22 – 3.25 of the Regulations, and related WorkSafe BC guidelines.

gathered during the facilitated session with Department members. The Consultants did not observe any actual training or emergency operations conducted by the Department and therefore rely on the accuracy of the information provided to us for our conclusions.

Overall, the Department's approach to training is well-considered and thorough. The Fire Chief and officers approach training and the safety of their members with the care and attention required of this critical aspect of fire department operations. The Department has developed an excellent local training facility over the past several years, which enables it to offer its members a full range of class room and live fire training. Training records generally are properly maintained, albeit with some room for improvement that has been noted in the Records Management section of this report.

While the ultimate responsibility for training lies with the Fire Chief, the Training Officer is responsible for the coordination of weekly training of volunteers. The Fire Chief undertakes all recruit training.

The Department does not have a formal written training program but does follow the BC Basic Fire Fighter Program and strives for the NFPA 1001 Fire Fighter II program. The issue of which program to follow is currently under discussion with the CRD. In the past the Department has had several members complete the NFPA 1001 program and move on to be career firefighters: this is a point of pride for the Department and rightly so.

New recruits are required to take part in the South Cariboo Recruit Academy – a program run by the Department and offered to all South Cariboo regional firefighters. The program uses the B.C. Basic Fire Fighter Program curriculum and is run over several weekends. The program is capped off with an exterior live fire day (dumpster, vehicle and exterior structure attacks). Upon completion of the program Department recruits become probationary members and are given a pager. They are permitted to attend incidents in a supporting role only.

Probationary members are bridged into the NFPA 1001 Fire Fighter Level II program and continue the training within the Department. After completion of approximately 50 hours of additional training a member is considered an exterior firefighter. Training continues after this level for another 90 hours at which time a member is considered an interior firefighter. The Fire Chief estimates that on average and depending on fire practice attendance it will take a probationary firefighter three months to complete the exterior fighter training and 12 months to complete the interior firefighter training. Of the total Department staff of 15 firefighters and six officers, the Fire Chief stated that some 12 members are qualified to conduct interior operations.

The designation of an individual's training qualifications at fire scenes are easily determined through the colour of their accountability tag: a blue tag indicates exterior only; yellow designates interior firefighters; and red designates an officer or team leader.

Those wishing to train to a Special Operations status (Rescue) are required to take an additional 80 hours of training which includes: Vehicle Rescue Operations I, Vehicle Rescue Operations II, THARR – Embankment Rescue, and Hazmat Operations.

Apparatus operators have 52 hours of training: Driving in OMHFR[43], Airbrake Endorsement, Precision Skills Course, Road Evaluations, Pump Operations, Tender Operations and a Class Three Drivers Licence. The normal progression for an operator is the wildland vehicle, the engine and finally the tender.

Weekly training practices are conducted year round. An attendance record of 70% of practices is required for all members. The Fire Chief indicated some allowances are made for those working out of town or absent for legitimate reasons.

Live fire training is conducted on a regular basis for all members. The Department's OG 3.03.02 clearly outlines the procedures and safety protocols which must be followed before, during and after each live fire exercise, which are based on the relevant NFPA standards.

The Department's chief officers and members are clearly committed to a high level of training and should be congratulated. The Department has one of the best approaches to training that we have seen among volunteer and composite departments in the province.

Operational Guidelines Review

The Department's operational guidelines ("OGs") were reviewed as part of the overall assessment of its training. In addition to being good practice, written OGs are a requirement of WorkSafe BC. In general, the Department has a well-developed set of OGs, which address the Department's principal operational and administrative issues. We note that it appears several of the OGs are still a work in progress and are encouraged to see that the Department has often used example guidelines from other departments rather than start from scratch on each and every new guideline. While we encourage this practice, we do offer caution that the Department ensure the information contained within any newly introduced OG is actually pertinent to its operations. There were several instances where internal references to the originating department had not been updated.

One area currently not expressly covered by the OGs is the matter of interior fire attacks. Interior fire attacks are among the riskiest of all fire department operations. We recommend that the Department develop OGs which specify the criteria that must be met prior to permitting fire crews to initiate an interior fire attack including:

- the situations in which an entry is warranted (e.g., a saveable life) and when it is not;

[43] 100 Hundred Mile House Fire Rescue

- the number and training levels and experience of personnel who must be on-scene before such an attack is undertaken;
- the required training and experience level of the incident commander; and
- what other fire ground and operational issues need to be taken into account before entry is made, such as: the availability of water; the condition, location and estimated advance of the fire; the availability of a Rapid Intervention Team ("RIT"); and the availability of further backup or support resources.

In general, the Department has done a good job of training its members and specifying the training levels required for conducting aggressive, interior fire operations. Even so, given the nature of the risks involved and the occupational health and safety requirements, we believe that all fire departments must provide very clear and precise guidelines outlining what criteria are to be met prior to allowing firefighters to undertake or participate in such operations.

Recommendation 15: The Department continue the process of developing and updating its OG manual.

Recommendation 16: The Department develop an operational guideline specific to interior fire attacks including criteria required to be met prior to their commencement. Those criteria should include: the issues involved in the size up by the incident commander; and the minimum experience, training and proficiency requirements of interior attack crews and leaders.

Recommendation 17: The District and the CRD develop a common approach to managing training for fire service personnel in the south Cariboo area.

Training Centre

The Department's primary training facility is located west of the Exeter Industrial area and far enough removed from any residential properties to allow for live fire burns.

As noted earlier, the Department runs the South Cariboo Recruit Program at the site in addition to its own department training program. The facility is very well laid out and enables the Department to conduct live fire evolutions including building, vehicle and dumpster fires; the classroom facilities while not overly large are certainly adequate to enable small groups to participate in group learning activities. In addition, the site has props for vehicle extrication and emergency rescue operations including over the bank rescue, confined space rescue and RIT Training. The Department and the District should be commended for the investment of time, effort and resources needed to create this facility which will serve the Department (and other area departments) well for the foreseeable future.

Although the area is not serviced by fire hydrants there is an 8,000 gallon water tank located on the property. The tank serves a dual purpose in that it provides water for firefighting and will serve as a test pit for annual pump testing (a responsibility the recently certified District Mechanic will now undertake).

General maintenance for the facility is provided by the volunteers while grounds maintenance is provided by District employees. During our site visit it appeared that grounds maintenance had not been completed for quite some time and, according to the Fire Chief, it is becoming a challenge to maintain the facilities with the use of volunteer staff.

There is a potential opportunity for the District to generate revenue from the training site which may partially off-set annual operating costs and the addition of career staff as recommended elsewhere in this report. We would recommend that the District research this potential opportunity.

Recommendation 18: The District and Department should actively investigate the potential revenue generating options available with the training site and determine what additional resources or support are required to manage such additional activities.

Budget Review and Benchmarking

The Department's operational budgets (and actual expenditures) over the past five years are as follows:

Year	Operational Budget	Actual (completed years)	Surplus (Deficit)	CRD Contribution	District (net cost)
2010	$559,982	$473,141	$86,841	$130,117	$343,024
2011	$481,100	$438,424	$43,676	$133,918	$304,506
2012	$638,660	$443,637	$195,023	$133,920	$309,717
2013	$568,846	$483,451	$85,395	$132,430	$350,021
2014	$607,950	[year not completed]	N/A	$143,095	[$464,855] [budgeted]

Table 4: Department Operational Budgets 2010 to 2014

Under the Fire Services Agreement with the CRD, the Fire Protection Area pays an amount equal to 34% of the prior year's actual operational expenditures (adjusted to remove certain District-only related costs). The Department's operational budgets over the past three years (2012 to 2014) represent a cost, on average, of about $0.833/$1,000 of assessed value for local

residents of the District.[44] The Department's net operational budget is approximately 7.7% of the District's overall budget.[45] As can be seen in Table 4, the Department has been able to contain its actual operational costs very effectively, resulting in material surpluses each year since 2010 (over the four year period, the average surplus was about 17.5% of the budget, or slightly over $100,000). As part of the District's overall program to be debt-free by 2019, a portion of any such surpluses ultimately is applied to retire the District's debt.[46] Indeed, another full-time paid position could largely be covered by the average annual surplus that occurred each year during the four year period 2010 to 2013.

As with most fire departments, the capital budget is highly variable. In years where a major piece of apparatus is acquired, or equipment replaced or upgraded, the capital budget is very large by comparison to years where the only expenditures are regular replacement of hoses, personal protective equipment and minor fire hall maintenance. The capital budgets since 2010 are as follows:

Year	Capital Budget	Actual (completed years)	Surplus (Deficit)	CRD Contribution	District (net cost)
2010	$521,500	$521,251	$249	$15,000	$506,251
2011	$29,000	$23,542	$5,468	$17,000	$6,542
2012	$115,220	$60,118	$55,102	$19,000	$41,118
2013	$40,000	$41,056	$(-1,056)	$21,000	$20,056
2014	$143,500	[year not complete]	N/A	$23,000	$120,500 [budgeted]

Table 5: Department Capital Budgets 2010 to 2014

[44] Calculation by District CFO, Flori Vincenzi, provided to the Consultants in an email dated 17 July 2014 by the Fire Chief. The net tax cost is actually somewhat lower, as property taxes only form a portion of the District's revenues. As noted in the discussion of the Fire Protection Agreement with the CRD, the tax cost to the residents of the Fire Protection Area (including the administration fee charged by the CRD) is $0.7666/$1,000 of assessed value.

[45] This is based on the 2014 budget, after subtracting the CRD contribution. See: District of 100 Mile House *Financial Plan Bylaw No. 1262, 2014*.

[46] Council policy, referenced on p. 12 of the District of 100 Mile House, *Annual Report for the period January 1, 2013 to December 31, 2013* (undated: 2014). Our understanding is that surpluses in the Department's budget are transferred to the District's general revenues and used to offset any budget overruns in other departments. Net year-end surpluses are then transferred to reserves and used, in part, to pay down the District's overall debt.

The Department's overall cost of operation is very reasonable from the perspective of local taxpayers and is line with or lower than the costs of comparable departments. There are two principal cost-drivers associated with operating a fire department:

(1) the number of career staff;[47] and

(2) the number of fire halls.

For each career staff member, the cost of operation will rise by ~$100,000 annually (after factoring in the cost of benefits, payroll taxes and the like). Where a department operates multiple halls, each fire hall will require additional apparatus and staff, and materially increases overhead for repairs, maintenance, operational expenses, capital upgrades and (ultimately) replacement. The effect of hiring career staff is well illustrated in Table 6, below, when one examines the costs for Fernie's department (which has seven career members). For the Fernie department, the difference in operating cost when compared to the Department is ~$600,000, which corresponds to the six additional career positions.

As communities grow, pressure develops on the "volunteer/paid-on-call" model. With growth, it is typical to see departments begin to add career staff to manage increased workloads including growing call volumes and greater administrative responsibilities. At present, a single career member and the attribution of one-half of an FTE for administrative assistance represent nearly one-quarter of the Department's annual operational expenditures.[48]

The comparison table which follows is largely based on work done by the Kootenay Fire Rescue Service, with which the Consultants assisted. We have included some additional comparators as well.

[47] For most career departments, the cost of wages and benefits typically make of 85% or more of a department's budget.

[48] In 2013, the 1.5 FTEs accounted for some $111,000 out of the Department's total expenditure that year of approximately $483,000.

Fire Department Cost Comparison Data

Jurisdiction	Population	Area (KM^2)	Population density	Households	Career	Paid-on-call & Volunteer	Apparatus	Fire Halls	Capital	Operating	Total	$/Capita	$/Household
Elkford	2,523	108.42	23	1437	2.4	30	8	1	$ 310,000	$ 514,000	$ 824,000	$ 204	$358
Christina Lake	3,167	530	6	1377	0	25	6	1	$ -	$ 344,256	$ 344,256	$ 109	$250
Sun Peaks	3,220	0.1	3710	1400	3	20	5	1	$ 24,000	$ 550,000	$ 574,000	$ 171	$393
Sparwood	3,667	191.01	19	1953	2	30	8	2	$ 150,000	$ 613,317	$ 763,317	$ 167	$314
Charlie Lake	3,700	124.8	30	1324	2	30	5	1	$ 464,000	$ 569,036	$ 1,033,036	$ 154	$430
Fernie	4,448	14.83	300	2848	7	20	7	1	$ 62,500	$ 1,144,604	$ 1,207,104	$ 257	$402
100 Mile House and CRD Fire Protection Area	4,857	97.54	50	2065	1	20	5	1	$ 40,000	$ 568,846	$ 608,846	$ 117	$275
Big White	5,138	7.6	676	2234	3	28	7	1	$ 600,000	$ 967,562	$ 1,567,562	$ 188	$433
Kimberley	6,652	60.62	110	3418	3	28	7	2	$ 264,136	$ 596,287	$ 860,423	$ 90	$174
Revelstoke	7,139	40.76	175	3379	8	35	7	1	$ 237,300	$ 1,443,525	$ 1,680,825	$ 202	$427
Grand Forks	7,172	10.43	382	3354	2	41	15	5	$ 1,300,000	$ 517,905	$ 1,817,905	$ 72	$154
Castlegar	7,816	19.58	399	3517	3	24	10	1	$ 10,000	$ 636,700	$ 646,700	$ 81	$181
Creston	8,806	8.47	627	3616	3	25	8	1	$ 63,000	$ 558,000	$ 621,000	$ 63	$154
Average	5,254	93.40	501	2456	3.0	27.4	7.5	N/R	$ 271,149	$ 694,157	$ 965,306	$ 144	$304

Table 6: Fire Department Cost Comparisons

Sources: Much of this data was assembled by Kootenay Boundary Fire Rescue Service using information from Statistics Canada, Municipal/Fire Department Websites and Fire Chiefs; the Consultants assisted in acquiring and providing data on several of the departments.

Notes:

- Jurisdictions are sorted by population served.
- 100 Mile House and CRD Fire Protection Area population is based on the 2011 Census and CRD estimate.
- Big White
    - Population assumption is calculated based on 2,234 privately owned residents multiplied by 2.3 (BC average residents per household – 2011 Census).

    - Population can range from 20,000 to 30,000 at peak season
    - 28 paid-on-call firefighters includes 6 resident work experience firefighters
- Sun Peaks
    - Population assumption is calculated based on 1400 privately owned residents multiplied by 2.3 (BC average residents per household – 2011 Census).
    - Population can range from 20,000 to 30,000 at peak season.
    - 20 Paid-on-call firefighters includes 6 resident work experience firefighters
- Christina Lake population assumption based on 1377 privately owned residents multiplied by 2.3 ((BC average residents per household – 2011 Census).
- Charlie Lake population based on Peace River Regional District estimates made in connection with work done by the Consultants for the Charlie Lake Fire Department in 2011.
- $/Capita is calculated by dividing Operating Budget by Population.
- $/Household is calculated by dividing Operating Budget by number of Households.

In general, the Department's operating budget is comparable to that of departments of similar size and composition. Given that the Department has run, on average, a 17.5% surplus since 2010, its actual expenditures are probably on the low side.

The District and the Department should review how they are managing the capital side of the fire service. They have done a good job in building up a capital reserve[49] but, as we have already noted in the apparatus section, the capital budget should be tied to a proper amortization of the major equipment, based on its identified lifespan. The Department's largest single asset – the fire hall – also needs some material upgrades (see discussion of the facility, above). The creation of reserves for the eventual replacement (or major overhaul) of the existing building also should be considered and built into the financial planning around the Department.

Occupational Health and Safety

Overview

Formal occupational health and safety programs are a requirement under the *Workers Compensation Act* (BC) (the "WCA") and the *Occupational Health and Safety Regulation* (B.C. Reg. 295/97, as updated to 1 April 2013) (the "Regulations"). The Department has operational guidelines which establish an occupational health and safety ("OH&S") program and deal with the appointment and operation of a joint committee.[50] In discussions with the Fire Chief, however, it was noted that the Department's joint committee is not functioning in the manner specified in the relevant OGs, nor as required under the WCA and the Regulations. This is not to suggest that the Department is not safety conscious. Monthly safety meetings are held, and minutes from those meetings are posted at the fire hall. The Department also has a strong emphasis on training of volunteer members and includes regular reviews of safety matters at meeting with fire crews.

The existing OGs, however, should be reviewed against the formal processes required under the WCA and the Regulations, and a properly functioning joint committee established. Failure to follow these requirements can present a liability risk to both the Department and the District in the event of an investigation or review by WorkSafe BC.

The following section lays out the framework for ensuring that there is in place an appropriate OH&S program and related joint committee.

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[49] In our experience, this distinguishes the Department and the District from many comparable communities, where capital planning is often neglected.

[50] See: OG #1.01.01 (Occupational Health and Safety Program) and OG #1.01.02 (Occupational Health and Safety Committee). The OH&S Program operational guideline is dated September 2009; the OH&S Committee operational guideline is undated.

It is worth observing that neither the WCA nor the Regulations lay out a straight forward discussion of either the formal requirements or content of an OH&S program for the fire services (or any occupation, for that matter). The statutory and regulatory structure is complex. The situation in the District is also somewhat novel: aside from the Department, the District does not have enough employees to warrant the establishment of its own joint committee, so there is no system in place upon which to model the Department's joint committee, nor are there substantial resources in place to draw upon for support.

The District and the Department should review the recommendations regarding OH&S matters (including its Workplace Hazardous Material Information System) with its usual counsel.

OH&S Program

The following discussion sets out a general overview of the requirements for an OH&S program.

The starting point for any consideration of OH&S is section 115 of part 3 of the WCA, which makes employers responsible, among other things, for:

- ensuring the "health and safety of all workers working for that employer";
- complying with the WCA and related regulations and orders; and
- establishing OH&S policies and programs in accordance with the WCA regulations.

Section 3.3(1) of Part 3 of the Regulations requires an employer to initiate and maintain an OH&S program when it has a workforce of more than 50 workers or where it has 20 or more workers and at least one workplace that is determined to create a moderate or high risk of injury.[51] This program must apply to "the whole of the employer's operations".[52]

The program must be designed to prevent injuries and occupational diseases, and is required to include:[53]

> (a) a statement of the employer's aims and the responsibilities of the employer, supervisors and workers;

[51] WorkSafe BC may also order any employer to implement an OH&S program. The Department almost certainly would constitute having a "workplace" which constitutes a "high risk of injury".

[52] Section 3.1(1.1) of Part 3 of the Regulations. This provision creates something of an anomaly in the case of the District. The District should review with WorkSafe BC if the Department having its own, separate OH&S program is sufficient and appropriate or whether the inclusion of the Department's members as part of the total number of District staff also impacts what formal OH&S requirements must be met by the District itself.

[53] Section 3.3 of Part 3 of the Regulations.

(b) provision for the regular inspection of premises, equipment, work methods and work practices, at appropriate intervals, to ensure that prompt action is undertaken to correct any hazardous conditions found;

(c) appropriate written instructions, available for reference by all workers, to supplement the Regulations;[54]

(d) provision for holding periodic management meetings for the purpose of reviewing health and safety activities and incident trends, and for the determination of necessary courses of action;

(e) provision for the prompt investigation of incidents to determine the action necessary to prevent their recurrence;[55]

(f) provision for the maintenance of records and statistics, including reports of inspections and incident investigations, with provision for making this information available to the joint committee or worker health and safety representative, as applicable and, upon request, to an officer, the union representing the workers at the workplace or, if there is no union, the workers at the workplace; and

(g) provision by the employer for the instruction and supervision of workers in the safe performance of their work.

The language in OG #1.01.01 should be reviewed against these formal requirements and updated. We note that the operational guideline appears to have been borrowed from another department and modified somewhat (for example, there is a suggestion that the Department is operating from multiple halls in section 2.03). In addition, some appendices are missing in OG #1.01.02, and both documents usefully could be reviewed and updated.

Joint Health and Safety Committee

As part of an OH&S program, employers are required to establish joint committees (or appoint worker safety representatives) to review safety issues. Pursuant to section 31.3 of the Part 31 of the Regulations, in a situation where an employer is required to

> "establish a joint committee or **[appoint a]** worker health and safety representative, then a fire department … operated by the employer must have a separate joint committee or worker safety representative, as applicable".

[54] This provision establishes the requirement for formal operational guidelines and/or standard operating procedures for the Department's primary activities, including emergency scene operations.

[55] Section 3.4 of Part 3 of the Regulations stipulates the required contents of any incident investigation report that is required to be completed.

Again, the oddity of the current situation is that the number of employees in the District – outside of the Department itself – would mean that a joint committee is not required. The District used to operate a joint committee, when it had more employees.[56] In this case, it probably is sufficient for the Department to operate a joint committee, with the District relying simply on having a worker health and safety representative (if it has more than nine and fewer than 20 employees at any workplace). That view, however, should be confirmed with WorkSafe BC.

The provisions covering the establishment of joint committees are found in sections 125 – 129 and section 139 of the WCA. Section 125 requires that a separate committee be established for each workplace where 20 or more workers of the employer are regularly employed, while section 139 requires that a worker safety representative be appointed in each workplace where there are from 10 to 19 employees.

In the case of the Department, regular membership in the Department is some 21 members plus the Chief, based in a single fire hall, which requires a joint committee to be established. As noted above, the Department is not operating its separate joint committee as required by the Regulations. The following is a general discussion of the requirements for the proper creation and operation of a joint committee by the Department.

In relation to the establishment of a joint committee, the WCA sets out detailed requirements regarding (among other things):

- membership on the joint committee and appointment of co-chairs from amongst the employer and employee representatives;[57]
- the means of selecting the worker and employer representatives;[58]
- the duties and functions of a joint committee;[59]
- the requirement for monthly meetings;[60]

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[56] Memorandum by then District Administrator Carollyne Evans, "Joint Committee membership" (13 August 2008). The memo noted the need for the Department either to appoint a worker representative (the Department then had fewer than 20 members) or operate a separate joint committee.

[57] Section 127 of the WCA. Minimum membership on the joint committee is four: two employer representatives and two worker representatives. One employer representative and one worker representative must act as co-chairs.

[58] Section 128 (worker representatives) and section 129 (employer representatives) of the WCA. As there is no union involved, selection of worker representatives must be by secret ballot – see section 128(1)(b).

[59] Section 130 of the WCA.

[60] Section 131(2) of the WCA.

- certain administrative requirements (such as the keeping and posting of minutes of the joint committee meetings);[61]
- the obligation of an employer to respond to recommendations from the joint committee;[62] and
- the employer's obligation to provide administrative support to the joint committee.[63]

The establishment and operation of a proper joint committee is a statutory requirement. The Department, in consultation with District staff, should review the existing OGs covering the creation of a joint committee against the requirements of the WCA and undertake to operate it as required by the statute. In general, the language in OG #1.01.01 and OG #1.01.02 does a reasonable job of tracking these formal requirements. The latter, however, is missing some appendices, including the one which is supposed to set out the duties and functions of the joint committee. We have marked up both operational guidelines and provided them to the Department separately for its consideration.

The joint committee is primarily responsible for ensuring that the Department is meeting the requirements of its OH&S program (including, for example, regular checks of the premises, apparatus and equipment), and for investigating workplace incidents should they arise.

The proper operation of a joint committee can be a time consuming task. Most volunteer members are not looking to take on additional administrative tasks. To overcome this problem, we would also recommend that:

- the Department specifically remunerate the individuals who participate on the committee for the time they will be required to commit to it – perhaps with a separate monthly stipend, plus an hourly rate in the event that the joint committee has to undertake an accident investigation or similar enquiry; and
- the regular monthly meeting of the joint committee be timed to occur at the end of the one of the regular practice nights. Most monthly meetings will not be long and committee members can be excused from any post-practice apparatus or equipment clean-up to attend the meeting.

[61] See sections 137(1) and 138 of the WCA. Minutes of the last three meetings of the joint committee must be posted in the fire hall.

[62] Section 133 of the WCA.

[63] Section 136 of the WCA.

WHMIS Program

In addition managing the formal requirements around the operation of a Joint Committee, the Department also needs to review its approach to its Workplace Hazardous Materials Information System ("WHMIS"). The Department regularly stores, manages and use quantities of materials which fall within the federal and provincial classification systems governing workplace hazardous materials. The Department has a book, updated annually, which includes the "Material Safety Data Sheets" on the products they use. There also is an operational guideline which references a WHMIS program (and requires that it be reviewed annually). The program itself, however, is not currently operating as required. For employers and workers, WorkSafe BC Regulations require:[64]

- Material Safety Data Sheets ("MSDS");
- Product labelling including product name, risk phrases, safety precautions, hazard class symbols, supplier information and reference to the MSDS; and
- Employee training and education.

Where the workplace requires a WHMIS program, the employer is required to:

- Assign responsibility for managing the WHMIS program;
- Establish an inventory of controlled products;
- Meet MSDS label requirements;
- Determine the hazards of the controlled products;
- Establish safe work procedures, workplace controls[65] and provide any necessary protective equipment;
- Establish emergency procedures in case of spill or employee exposure;
- Provide education and training to members; and
- Review the WHMIS program annually.

The Joint Committee must be involved in the development of the program.

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[64] See: sections 5.2 – 5.19, "Workplace Hazardous Materials Information System" in the Regulations; see also: Guidelines G5.3-1 to G5.15, "Workplace Hazardous Materials Information System" in the WorkSafe BC interpretative guidelines.

[65] Controls may include: ventilation, process modification, isolation of the source, specific work procedures, changed storage arrangements, etc.

Recommendation 19:	The Department and District should review and update the Department's OH&S program, based on the comments noted in the OH&S section above and mark-up of the related Operational Guidelines provided to the Department.
Recommendation 20:	That the Department implement a functioning Joint Committee, and revise its Operational Guideline related to the Joint Committee as noted in the mark-up provided to the Department.
Recommendation 21:	That the Department implement a functioning WHMIS program and training for its members. In each case (recommendations 19, 20 and 21), the District should review its OH&S obligations with its usual legal counsel.

Response Analysis

The response analysis for the Department is based on data from 1 January 2009 to 31 December 2013.[66] During this period the Department's responses have increased from approximately 20 calls per month to 25 per month (Figure 1). In most years the highest call volume occurs in the late autumn and winter.

[66] The Department is dispatched by dispatchers with the Prince George Fire Department, using a Computer Aided Dispatch (the "CAD") system which creates the incident report including the incident type and all responses times.

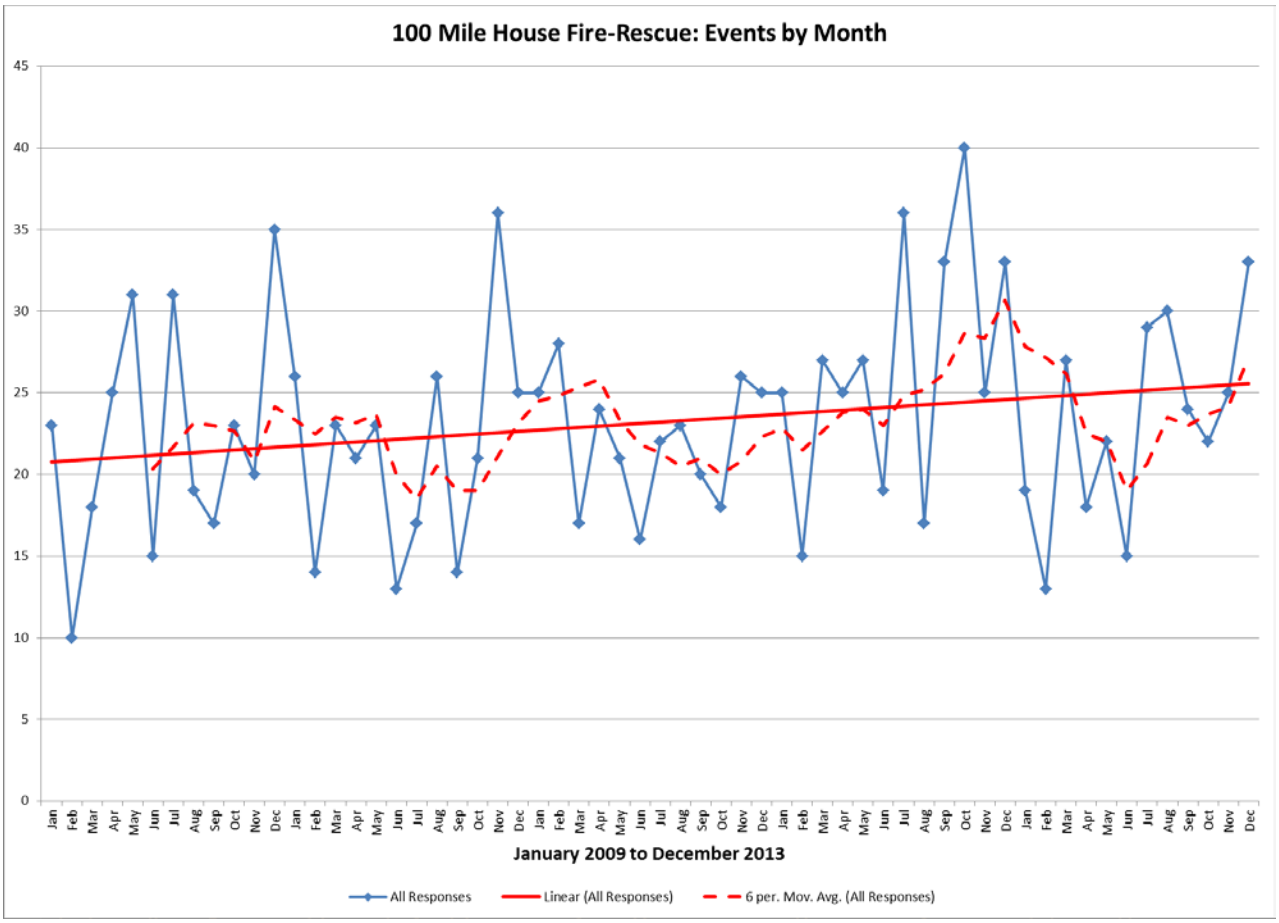

Figure 1: Total Events by Month 2009 to 2013

The Department's primary fire protection area is sub-divided into 4 zones with the 5-year total for responses shown.

Response Zone	Geographical Description	Total Responses
100101	In 100 Mile House	696
100102	Highway 97 North	86
100103	East to Forest Grove	61
100104	Highway 97 South and Horse Lake	178

Table 7: Total Response by Response Zone

The breakdown of the responses based on each zone of the period reviewed is shown in Figure 2. The Chief notes that the up-tick of responses in 2012 was for one single property and the issues causing that number of responses has been resolved.

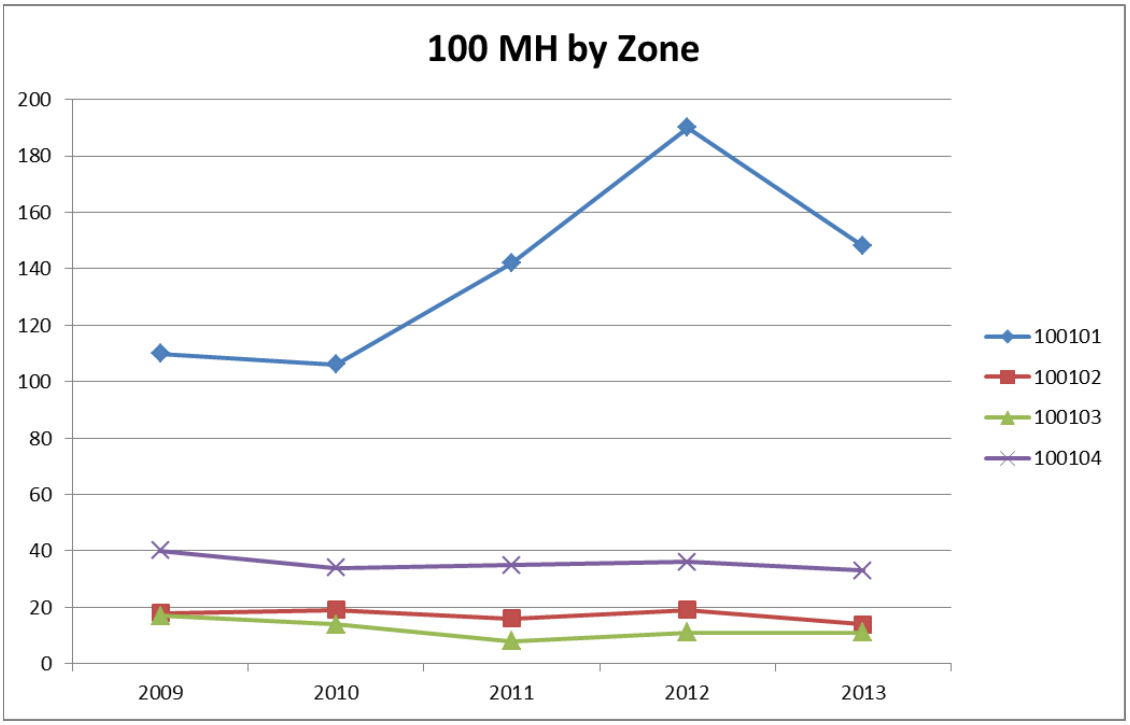

Figure 2: Total Responses by Zone

Responses by Hour

Responses by hour of the day are summarized in Table 8 and Figure 3.

Hour	Responses	Hour	Responses
Midnight	34	1200	83
0100	33	1300	91
0200	21	1400	92
0300	20	1500	82
0400	32	1600	74
0500	27	1700	96
0600	40	1800	79
0700	37	1900	70
0800	53	2000	61
0900	71	2100	45
1000	90	2200	50
1100	75	2300	34

Table 8: Responses by Hour

This type of response curve is typical of most fire departments that respond to First Medical Responder (the “FMR”) incidents. For such a department, the lowest call volume is from late evening through early morning, with the peak occurring from noon through the late afternoon. This information is useful as it suggests that where possible apparatus maintenance activities should be scheduled in the morning as they are less likely to be interrupted by an emergency call out.

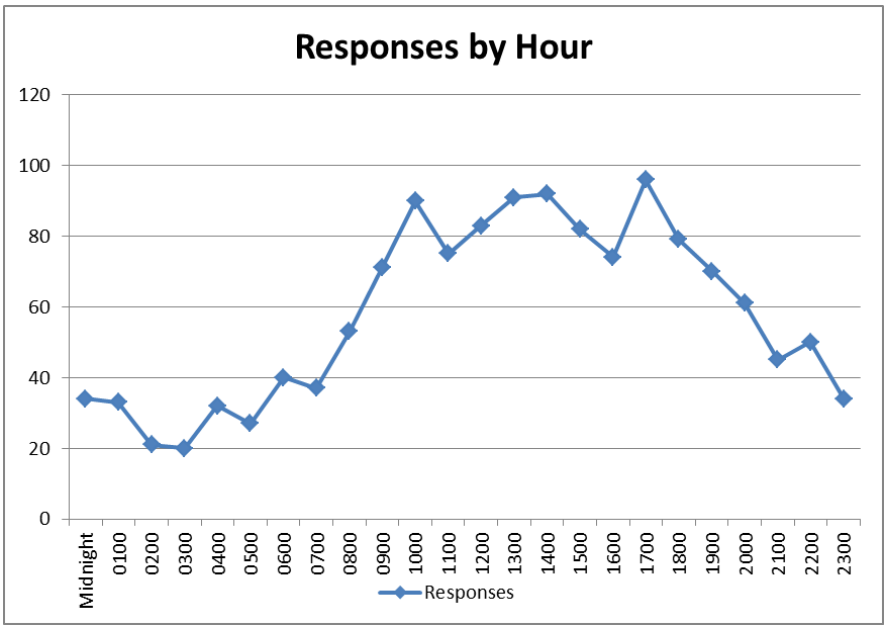

Figure 3: Responses by Hour

Responses by Day of the Week

Responses by day of the week are shown in Table 9 and Figure 4. This distribution with Friday as the busiest day is typical with most departments with Friday, Saturday and Monday having a higher call volume than Sunday or mid-week.

This information is useful in a similar way to the response by hour of the day. Given that call volume on the busiest day is 21% higher than Tuesday or Wednesday, any day-time training or apparatus maintenance would be better scheduled on a Tuesday or a Wednesday to minimize the chance of interruptions.

Day	Responses
Sunday	161
Monday	215
Tuesday	188
Wednesday	187
Thursday	201
Friday	228
Saturday	210

Table 9: Responses by Day of the Week

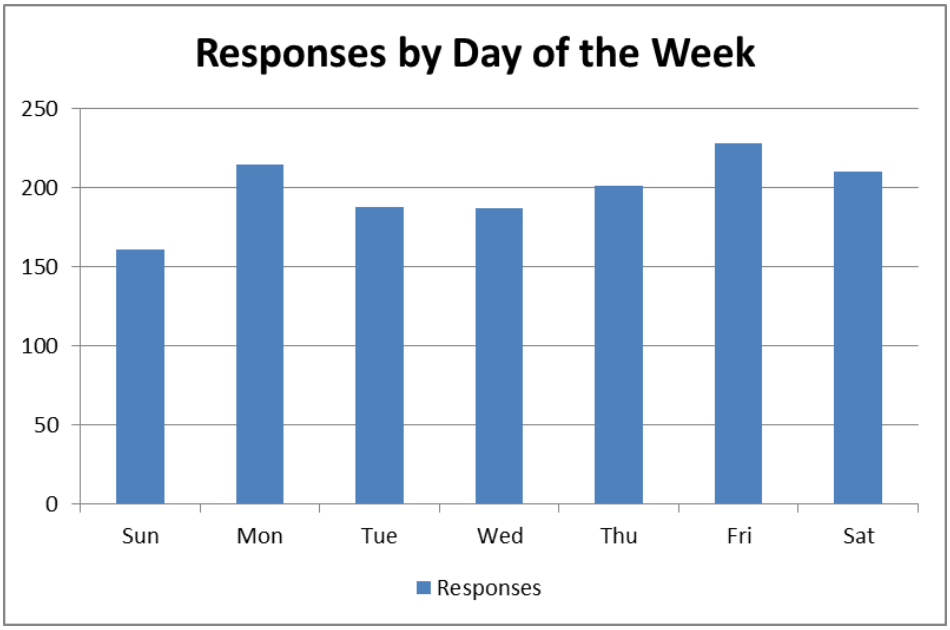

Figure 4: Responses by Day of the Week

Responses by Month

Responses by month are shown in Table 10 and Figure 5 below, with the busiest months being November, December, May and July. The call volume in the winter months can likely be attributed to a higher occurrence of road rescue calls and other weather-related matters. The higher call volume in the summer months are more related to outdoor burning and bush fires.

The value of this information is to provide some guidance to the Department in terms of scheduling the availability of a minimum number of volunteers to be able to respond in support of the mandate for service.

Month	Responses
January	118
February	80
March	112
April	113
May	124
June	78

Hour	Responses
July	135
August	115
September	108
October	124
November	132
December	151

Table 10: Responses by Month

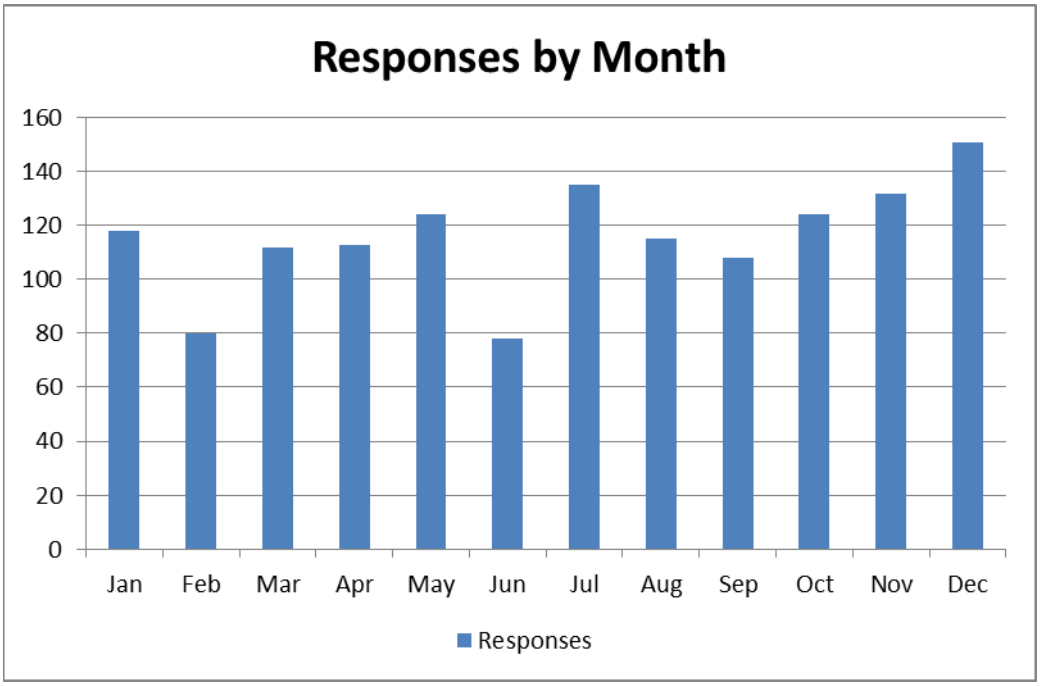

Figure 5: Responses by Month

Response by Volunteers

The Department also tracks the response by volunteers to emergency incidents. For many jurisdictions, response during normal business hours is a problem however this does not appear to be the case for the Department. Table 11 provides a breakdown of volunteer attendance by day and by night and compared to many volunteer departments the day time response for the Department is strong. Much of this strength can be attributed to having three members of the Public Works Department also serving in the Fire Department as volunteers, and the fact that the Fire Chief is shown as a responding member. There are some concerns that in some cases, the turn-out by fully trained members is low (an issue not clearly shown in the statistics) and the need for a Class 3-qualified driver for the water tender is a major issue.

Year	Average Volunteer Response	
	0800 to 1800	1800 to 0800
2009	6.9	9.1
2010	6.6	8.8
2011	8.7	10.2
2012	6.8	7.8
2013	8.9	9.9

Table 11: Volunteer Turn-out to Incidents

Figure 6 shows that day-time response by volunteers is increasing; response after hours (Figure 7) is consistent and positive.

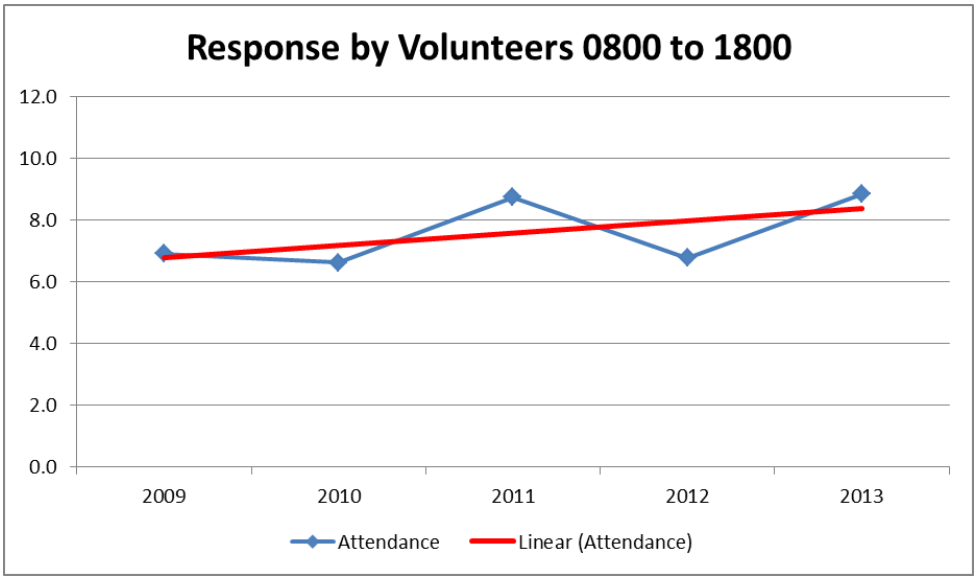

Figure 6: Responses by Volunteers 0800 to 1800

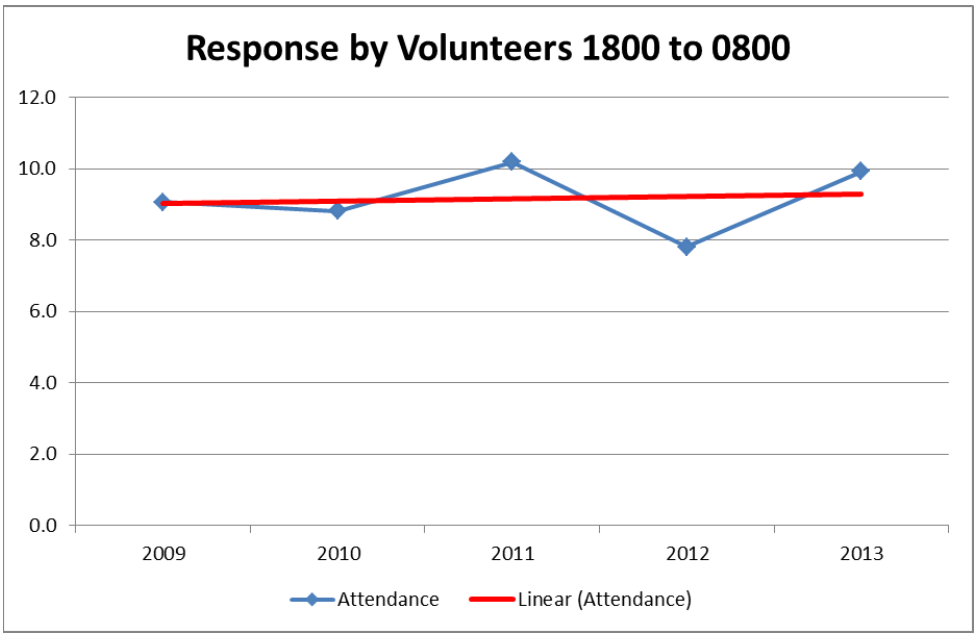

Figure 7: Responses by Volunteers 1800 to 0800

All Responses

The response data for the period can also be plotted spatially as shown in Figure 8 and Figure 9.

Figure 8 shows the locations to which the Department responded for all incident types. These responses include those within the Town and the fire protection area as well as those beyond that for mutual aid, or road rescue.

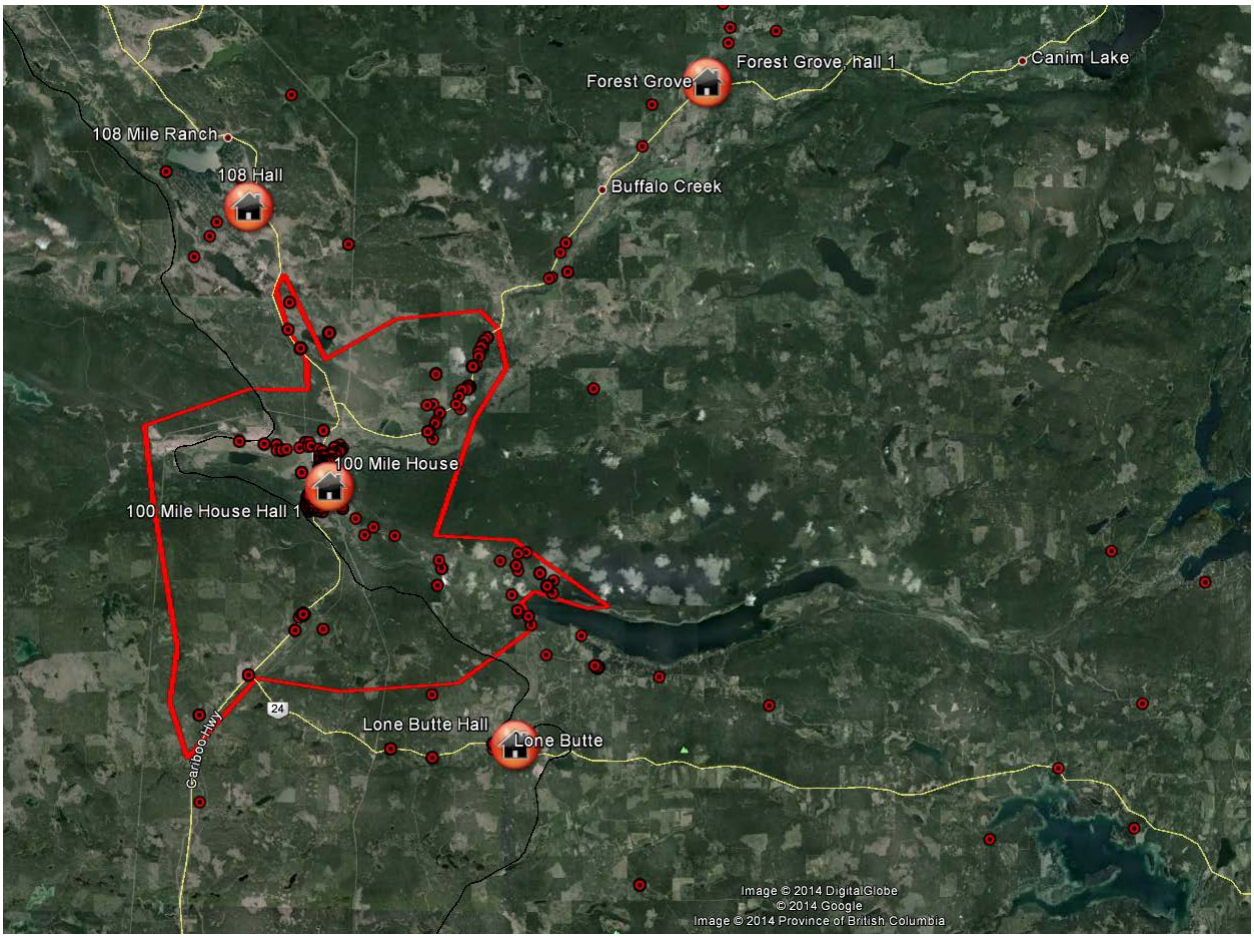

Figure 8: Locations of All Responses. Fire Protection Area outlined in red.

Figure 9 shows the location of all responses for a fire reported in a structure. This includes the incident type of structure fire as well as kitchen fire and chimney fire. The largest number of these events occurs within the fire protection area centred on the District, Exeter and Gateway.

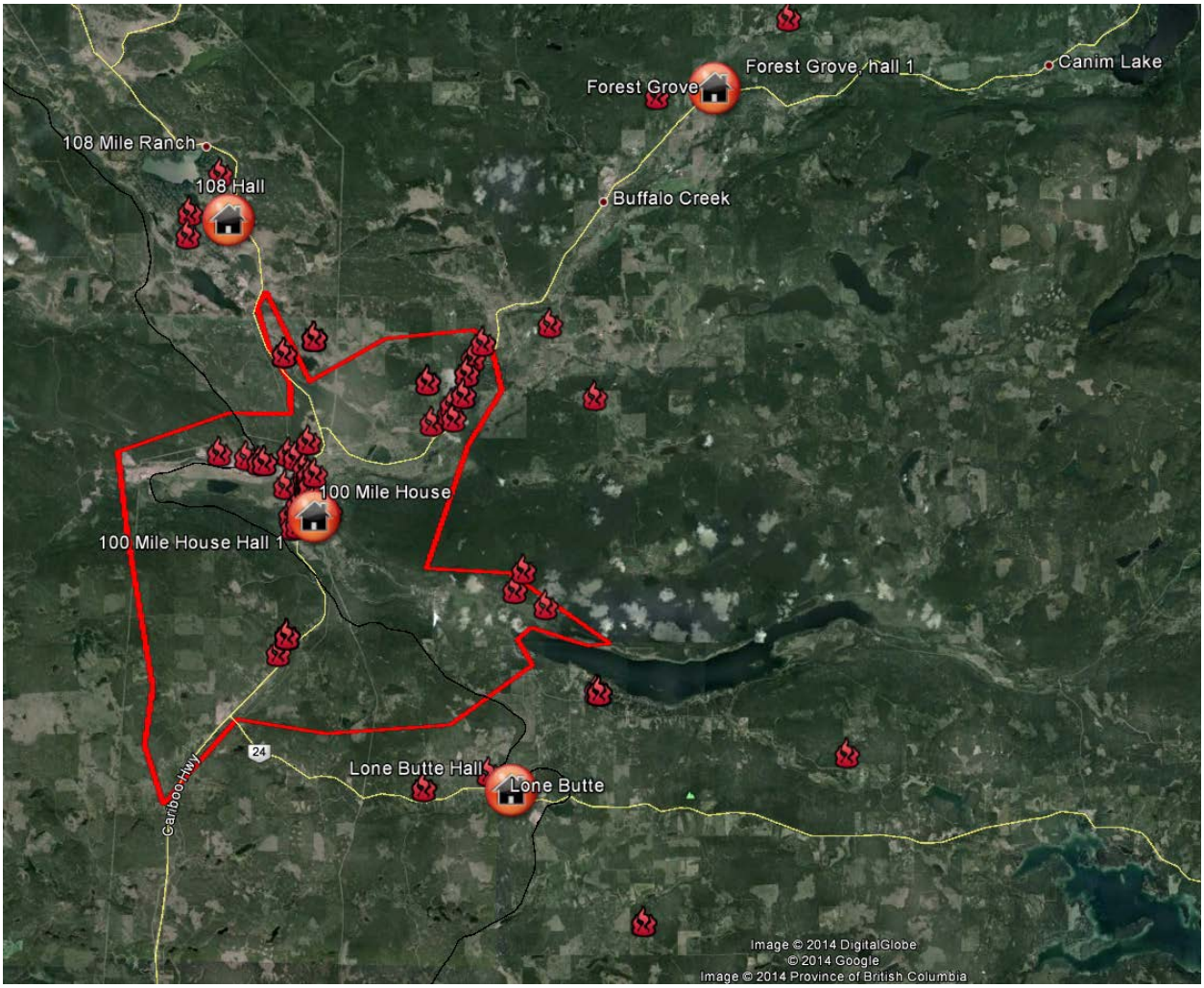

Figure 9: Locations of Responses to Structure Fires

Communications

The Department is dispatched by the Prince George Fire/Rescue Department ("PGFR") from its communication centre at Hall 1 under a contract between the CRD and the Regional District of Fraser-Fort George. The fire dispatch facility at PGFR was reviewed: it has career fire dispatchers, operates a modern computer-aided dispatch system and overall is well managed. The facility also has suitable levels of redundancy including an operational off-site backup dispatch centre.

9-1-1 call answering is provided by the North Division of the RCMP in Prince George which in turn transfers fire calls for the CRD to PGFR. Calls for medical assistance are transferred by the RCMP to the B.C. Ambulance Service (the "BCAS") in Kamloops. For those requiring FMR response the request is made by means of the CAD to CAD link between the BCAS CAD and the system used by PGFR. It should be noted that 9-1-1 will change in November 2014 when the service provider will become E-Comm in Vancouver.

The fire dispatchers provide a complete service in that once they have alerted and dispatched the Department, they remain connected by radio to monitor the incident for any additional requests as well as to track apparatus response times. The primary radio connection is by a link to the local 100 Mile House radio system, with a backup system being a satellite phone.

The Department's mobile radio system is owned by the District and maintained by a private contractor. The Fire Chief advises that the Department has sufficient radio channels for its current mandate, although there are gaps in coverage which should be documented as these pose a safety risk. These gaps include specific areas as well as problems with signal penetration in some larger buildings such as the OSB plant and others.

Recommendation 22: The Department should document the locations at which radio coverage is problematic and then consider a remediation strategy.

The Department utilizes a Swissphone paging system that allows it to track firefighter availability and response. The screen shot from this system (Figure 10, below) shows each individual firefighter and his or her availability. It also shows their current location, their rank and the types of responses for which they are qualified. When a call is in progress, firefighters can update their status and alert the Department as to whether or not they are responding.

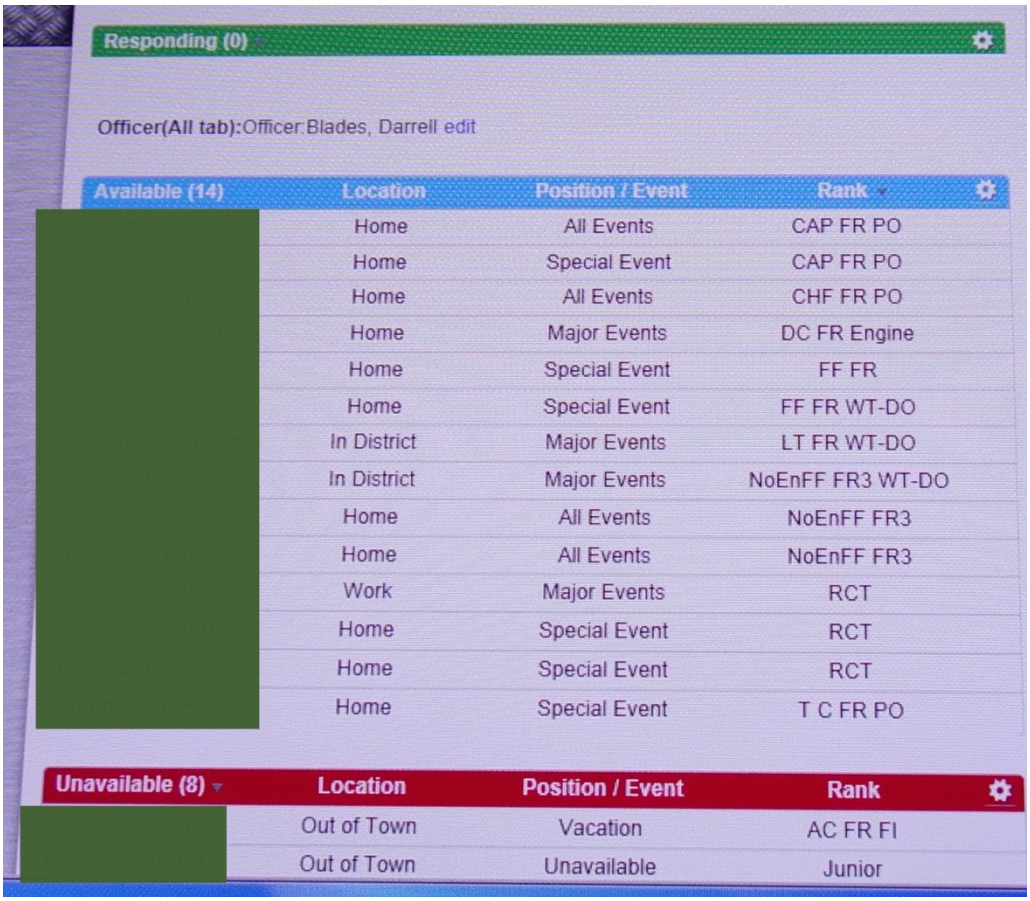

Figure 10: Swissphone Paging System - screen shot

Service Agreements and Mutual Aid

Fire Protection Agreement

The Department provides fire protection services to portions of Electoral Areas "G", "H" and "L" (the "Fire Protection Area") of the CRD under the terms of an agreement dated 16 September 2010 (the "Agreement").

Notwithstanding its date,[67] the Agreement's term runs from 1 January 2010 to 31 December 2014. Under the Agreement, the District has agreed to provide fire protection and prevention services to the designated Fire Protection Area. The CRD has agreed to pay 34% of the Department's actual operating costs on a trailing year basis,[68] and to contribute certain fixed

[67] The Agreement is dated as of 16 September 2010.

[68] Section 3 – the cost for any given year is 34% of the Department's "actual operating costs" for the previous year.

amounts towards capital.[69] The Agreement requires the Department to provide monthly statistical and annual reports to the CRD and includes a basic mechanism for adding (and removing) properties and adjusting the amounts payable for the service.[70] The Agreement includes an indemnification from the District to the CRD against any claims arising from the provision of the services and requires that the District maintain insurance for possible claims (with the CRD added as a named insured).[71] The Agreement may be cancelled at each calendar year end, by a party providing not less than 180 days' notice of termination.[72]

Our understanding is that the current cost to the residents of the Fire Protection Area is $176,000 for the 2014 budget year which translates into a residential tax rate of approximately $0.77/$1,000 of assessed value.[73]

In connection with the upcoming re-negotiation of the Agreement, we would suggest that the following issues should be considered:

1. Powers and authority: The new agreement should include an express statement setting out the powers and authority of the Department to operate in the Fire Protection Area. Ideally, this would involve a provision to the effect that the powers and authority granted to the Department under the Fire Services Bylaw (as same may be amended) apply within the Fire Protection Area. The Agreement also should provide that, subject to approval of the Fire Commissioner, the Department's Fire Chief (and anyone appointed in writing by him or her) will be the Local Assistant to the Fire Commissioner for the Fire Protection Area.[74]

[69] Section 4 – the capital contribution starts at $15,000 in the first year of the contract and increases by $2,000 annually to $23,000 in the final year (2014).

[70] Section 6 deals with adding properties (and increasing the service fee); section 7 addresses the possibility that the municipal boundaries of the District may be expanded to incorporate some portion of the Fire Protection Area (resulting in a decrease to the service fee).

[71] Section 11 (indemnification) and section 12 (insurance). The indemnification provision does not apply if the claim results "from negligence of the Regional District".

[72] Section 18 (early termination).

[73] The tax rates are set out in: Cariboo Regional District, "2014 Budget Consultation: South Cariboo Tax Rates," at: www.cariboord.bc.ca/uploads/151/southcariboohandout-pdf . The tax rate noted in the handout was 0.7666/$1,000 of assessed value. A portion of the amount raised is retained by the CRD as an administration fee.

[74] We understand from the Fire Chief that this appointment has actually occurred: the revised agreement, however, should expressly address the issue.

As noted in the discussion of the Fire Services Bylaw (above), the powers and authority also should include the ability to charge for certain services (e.g., re-inspections, if inspection services are provided) or ticket for offences.

2. Service level commitment: Section 2 of the Agreement currently requires that the Department provide a level of service "meeting or exceeding the minimum requirements for the Fire Underwriters Survey dwelling protection grade 3B". As discussed in the section of this report dealing with the Fire Underwriters, the distances involved may well preclude a "3B" rating for those portions of the Fire Protection Area which are beyond eight kilometres by road from the fire hall. While this risk may be mitigated by entering into automatic aid arrangements for structure fires for some portions of the protected zone (e.g., in the southern portion, which could be protected in part by Lone Butte), the only way to meet this service commitment would be by constructing and operating one or more additional fire halls.

   A more usual formulation for this section is to provide that the Department will provide substantially the same type and level of service in the Fire Protection Area (subject to increased response times based on distance) as it does within the District's boundaries. The Agreement also should expressly acknowledge that the Department is a volunteer service and the turnout to any given incident may limit the Department's response capabilities.

   The provision of service also should be made conditional on access being maintained (including road maintenance and clearing, and, where relevant, appropriate access to properties within the Fire Protection Area).

3. Services provided: The Department is committed to providing "fire and prevention services", terms which are not defined. The actual range of services being provided – e.g., fire suppression, rescue/auto extrication, first medical responder services, etc. – should be set out, along with any limitations on those services. If any services are not to be provided – for example, fire inspections of "hotels and public buildings" – then that also should clearly be stated. Even if the Department is not providing inspection services, it should be empowered to conduct fire pre-planning for properties, other than single family dwellings.[75]

4. Dry Hydrants: One of the issues which impacts the delivery of fire services in the Fire Protection Area is the lack of a water system. The Department has identified a number of locations that would support the installation of dry hydrants, which would provide a ready and close source of water to enable the re-filling of the Department's water tender or water tenders provided by its mutual aid partners. The installation of dry hydrants

[75] As an LAFC, the Fire Chief (or designate) would still be able to address fire hazards on any property within the Fire Protection Area, in accordance with the powers granted under the *Fire Services Act* (BC).

would materially improve the provision of fire protection services in the Fire Protection Area. In the fullness of time, such dry hydrants also would better enable the Department to seek to obtain "Superior Tanker Shuttle Accreditation" from the Fire Underwriters (which potentially would improve the rating and lower the insurance cost for various properties within the Fire Protection Area). This issue should be reviewed with the CRD and a cost allocation formula devised. Properly located, certain of the hydrants may also be of benefit to one or more of the surrounding CRD departments as well.

5. Miscellaneous: A few additional matters should be addressed in the new agreement or raised with the CRD during its negotiation:

    a. The revised agreement should refer to both the District's Fire Services Bylaw (which establishes and authorizes operations by the Department) and the local service area bylaw by which the CRD is authorized to provide fire services and tax residents within the Fire Protection Area.

    b. There should be a formal process by which issues affecting the Fire Protection Area (or which affect operations of the Department, and by extension, affect the Fire Protection Area), can be raised and addressed. This process also can be used to address any disputes or issues arising in connection with the delivery of services in the Fire Protection Area.

    c. There should be consistency how open burning is managed between the District and the Fire Protection Area. The District's open burning bylaw should be reviewed against any relevant CRD bylaws for the Fire Protection Area and brought into alignment.

Recommendation 23: The Department and the District will be renegotiating the Agreement with the CRD in the near future. When revising the Agreement, consideration should be given to the matters identified in this section, including: clearly stating the Department's operational powers and authority in the Fire Protection Area; identifying what services are (and any services that are not) to be provided; expressly authorizing the Fire Chief to act as the LAFC for the Fire Protection Area; and revising the way the service level commitment is expressed.

Mutual Aid Agreement

The District is a party to a "Mutual Aid: Firefighting Assistance Agreement" which was entered into in 2009[76] (the "Mutual Aid Agreement"). The other parties to the Mutual Aid Agreement are

[76] The version provided for review is undated, other than the year.

the CRD (in respect of the departments at Forest Grove, 108 Mile Ranch, Lac La Hache, Lone Butte, Interlakes, and Deka Lake), Greeny Lake Volunteer Fire Department and Watch Lake-North Green Volunteer Fire Department.

Mutual aid agreements are essential tools that enable fire departments to provide aid to one another, when circumstances warrant. They permit departments to share resources and specialty services (e.g., specialty rescue or hazardous materials responses), and enable them to obtain critical support for major incidents or other situations where a department's resources are overwhelmed by events. As noted in the discussion of the Fire Services Bylaw, a fire department's operational authority does not extend beyond the boundaries of its defined fire service area. Such agreements provide the mechanism by which such assistance can legally and properly be provided, and protection for the fire departments involved.

The existing Mutual Aid Agreement has no specific term. It may be terminated by any party on not less than 90 days' notice, and is supposed to be reviewed annually.[77]

Under the agreement, the only assistance which can be provided is a response to a "fire". Section 1 reads, in relevant part, as follows:

> "Upon either **[*sic*]** party's Fire Chief, or designate, requesting the assistance of the other **[*sic*]** party's Fire Department to attend a fire occurring it jurisdiction […]".[78]

Section 12 contradicts this somewhat, suggesting that mutual aid can be requested "for common services provided between the responding Fire Departments" (i.e., that a department may request any form of assistance that it also is able to provide).

The parties should consider broadening this clause to permit requests for other forms of assistance – provided that such requests do not displace existing arrangements for matters such as road rescue, which operate under PEP authorization. In the event that only one or two departments are in a position to provide certain specialty services, the parties should consider either developing a shared funding formula for maintaining the special service or permitting a request for such service, subject to payment for the response.

Under the Mutual Aid Agreement:

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[77] Mutual Aid Agreement, section 13. The parties may wish to consider putting a five-year term on the Mutual Aid Agreement – particularly if any revision permits specialty services to be rendered for an agreed cost (see section 175 of the *Community Charter* (B.C.), which requires agreements under which local government may incur liability to have a term of five years or less, unless approved by the voters). The Fire Chief notes that, notwithstanding the annual review requirement, the agreement has not been formally reviewed since it was established.

[78] Given that the Mutual Aid Agreement has multiple parties to it, the provision should read "Upon any party's Fire Chief" and "assistance of another party's Fire Department".

- Each party must be able to communicate with the other parties by radio (section 2);
- There is no liability for failing to respond to a request for mutual aid (section 3);
- The incident commander of the department requesting assistance is "responsible for overall direction and control of fighting the fire" (section 4);
- Each department is required to maintain insurance for its equipment and Workers' Compensation coverage for its responding members (sections 5 and 6);
- The parties will not bill each other for any costs connected with providing mutual aid assistance (except for billing of insurance companies, if relevant) (section 9); and
- The parties are required to: consult with each other annually regarding improving mutual responses (including joint training); ensure interoperability of equipment and connections; and ensure that personnel from an assisting department "observe the bylaws and regulations of the area in which they are attending the fire" (section 10).

In section 9, the parties have provided that liability for claims arising in connection with any mutual aid response is the sole responsibility of the party requesting assistance. We would recommend reviewing this section and consider:

- including an express indemnification provision from the party whose department requests assistance; and
- adding an exception for gross negligence or wilful misconduct on the part of any responding mutual aid department.

Some additional matters which should be considered for inclusion in any revision to the Mutual Aid Agreement:

(a) There should be an express statement of the power and authority of responding departments. There are two approaches to this issue: either the responding department can be granted the same power and authority as is enjoyed by the requesting department (which seems to be what is implied by section 10(c)); or the responding department can be granted the same power and authority to operate in the requesting department's jurisdiction, as it enjoys in its home jurisdiction.

The CRD departments already operate under a single "operational powers" bylaw.[79] It is not clear what power and authority the two independent fire departments have to provide service. To the extent reasonable, the District and the CRD should consult to ensure that the powers granted by each of them to their respective departments are broadly

[79] *Cariboo Regional District Fire Departments, Bylaw No. 4800, 2013*.

consistent. However, if specialty services are to be included in mutual aid responses, a responding department which is providing such service likely needs to retain the power and authority of its own bylaw in order to operate.

(b) The Mutual Aid Agreement should require the respective fire chiefs to agree a uniform incident command system for mutual aid calls. This is implied in section 4 but should be expressly stipulated. The typical approach is to adopt the BCERMS[80] incident command system.

(c) There should be express consideration of situations where a department responding to a mutual aid request is either the first or the only department on scene. This can arise as a result either of geography or because the requesting department already is fully engaged in another incident.

(d) In relation to training and proficiency of responding members, the parties should:

i. Agree on the minimum training and/or experience required of firefighters being sent in response to a mutual aid request; and

ii. Agree on a common system for identifying different levels of training and experience for firefighters operating at an incident[81] and ensure that use of such system matches actual training and experience levels.

(e) In relation to insurance, the parties should consider requiring a minimum level of general liability insurance for claims.[82] Consultation will be required with the two independent departments, since their coverage limits likely are lower than those of the District or the CRD.

(f) The parties should set out a process for dealing with their dispatch provider to ensure that mutual aid resources are properly activated. The dispatch provider should receive notices of any changes to the agreement and any changes to fire service boundaries and should be included in discussion of mutual aid responses which have occurred.

Recommendation 24: The District and the Department should review the existing Mutual Aid Agreement with the CRD and other parties, and update it taking into account the comments noted in this section. In particular, any revised mutual aid agreement should: clearly

[80] BC Emergency Response Management System

[81] There is a colour-coded "South Cariboo accountability system" already in place: this system should be formally recognized and required by the mutual aid agreement.

[82] Section 9, even as currently drafted, will not be of much use if the party in question lacks insurance and is unable to pay a claim.

describe the powers and authority of responding mutual aid departments to operate in the neighbouring department's jurisdiction; address issues related to incident command and minimum training of responding members; deal with insurance requirements more expressly; and include the dispatch provider in discussions of any changes to the mutual aid arrangements and/or reviews of mutual aid calls which have been carried out.

Fire Service Delivery Options

Notwithstanding the comments in the previous section, there are other options available to the District and the CRD for providing fire protection. While not exclusive, these include: (1) automatic aid and (2) a more regional approach to delivering fire service. A brief discussion of each along with the rationale is set out below.

Automatic Aid

"Automatic Aid", which may better be described as "automatic mutual aid" is a response system by which the closest apparatus and manpower are automatically dispatched to an emergency incident regardless of which fire protection area the incident occurs. Unlike a standard mutual aid agreement where the response by a neighboring department is contingent on a request for assistance on each specific incident, an automatic aid agreement assumes the request for assistance and automatically dispatches appropriate assistance. Protocols for what department resources are dispatched to which incidents are pre-determined when the agreement is established (or through protocols developed and maintained by the respective chief officers). Parties may choose to limit automatic aid to specific incident types, specific or defined areas of each fire protection zone, and even to specific times of the day or days of the week.

For the Department, automatic aid would be of particular benefit in relation to calls in certain portions of the Fire Protection Area, though it also would mean a quicker assistance response in other major incidents as well. At the same time, it likely will mean an increase in the number of out-of-jurisdiction responses, as the Department itself will likely end up providing more assistance to its neighbours.

As an alternative to a full automatic aid agreement, there are several examples throughout the province of limited automatic aid agreements. In the Department's case an agreement to have water tenders automatically dispatched to structure fires within the District would greatly enhance its ability to provide fire protection. Automatic aid to calls at either the OSB plant or the mill also would be useful. [83]

[83] It should be noted that the area fire chiefs are already essentially providing each other with automatic aid for confirmed structure fires. Arrangements have been put in place with the dispatch provider to ensure that support for such incidents automatically is dispatched. There are material benefits – in

During our discussions with the Fire Chief, he noted that the Department would like to achieve FUS Superior Tanker Shuttle Service Accreditation[84] over the next three to five years. To achieve this accreditation, the Department will have to increase its water carrying capacity. The least costly method of achieving this will be through automatic aid agreements with neighbouring departments.

Regional Fire Service

While the concept of "Regional Fire Service" is not common in British Columbia, it is an idea that is starting to gain more support in light of both on-going budgetary constraints and ever increasing requirements for volunteer departments to achieve higher levels of training and meet a growing administrative burden. While there are many examples of neighbouring fire departments amalgamating or merging, to our knowledge the only true regional fire service in British Columbia is the Kootenay Boundary Regional Fire Service ("KBRFS"). The KBRFS is operated by the regional district and provides fire protection services to six communities plus the surrounding unincorporated electoral area. Each of the communities involved had formerly operated their own volunteer fire departments. The principal communities include: Trail, Rossland, Warfield, Montrose, Fruitvale and Genelle. A single department serves the fire protection area, operating out of six separate fire halls.

Other communities have moved toward increased functional integration and use a support model, typically with the relevant regional district providing a material role in coordinating and overseeing fire service delivery. In many respects, the CRD already applies this type of model with the oversight functions that it has created to manage the departments for which it is directly responsible.

The primary advantage in better integration is that it improves the economics of the fire service, and allows for coordinated investment in training, apparatus, equipment and, in the fullness of time, optimized fire hall locations.

In the case of KBRFS a few examples of the advantages these communities have realized include: 24/7 fire protection and rescue response by career firefighters supported by a substantial volunteer contingent; volunteer training provided by career instructors; the shared acquisition of apparatus and equipment (less equipment is required); standardized training and operational guidelines; and centralization of most administrative responsibilities.

In order to take this forward, the District should formally approach the CRD to determine the level of interest in enhancing functional integration of the area departments. The parties will

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particular when the Fire Underwriters eventually undertake another area review – to formalizing these arrangements in a properly documented agreement.

[84] Achieving FUS Superior Tanker Shuttle Accreditation is a method by which FUS ratings can be improved and can often result increased savings for residents fire insurance premiums.

then need to undertake a detailed analysis including considering the potential cost – benefits involved and well as addressing the substantial change management issues that can be expected to arise if they proceed along this route.

Recommendation 25: That the District investigate entering into an Automatic Aid Agreement with 108 Mile House Fire Department and Lone Butte Fire Department for the provision of water tenders for structure fires within the District of 100 Mile House

Recommendation 26: That the District work with the CRD and undertake a feasibility study on enhancing functional integration of the fire departments in the area, including considering the possibility of forming a sub-regional fire service in the southern Cariboo Region.

Fire Underwriters Survey

This section will examine the role and importance of Fire Underwriters' reviews, and provide a brief background on the methodology employed and importance of such reviews to residents in the Department's fire service area. The District has not had a Fire Underwriters' review since the early 1980s, though updated data (most recently with regard to the District's water and hydrant system) has been provided as requested. Given that there is no current review covering the Department's fire service area the following comments are necessarily general in nature.

The Fire Underwriters are a national organization administered by Opta Municipal Consulting services (formerly, SCM Risk Management Services Inc.). [85] It has a number of earlier incarnations – it was formerly CGI Insurance Business Services, the Insurers' Advisory Organization and Canadian Underwriters Association – but in each instance, the organization was, and we believe remains, owned or controlled by the insurance industry.

The primary purpose of the FUS is to establish the Dwelling Protection Grade ("DPG") and Public Fire Protection Classification ("PFPC") for each community in the country.[86] The DPG rating generally applies to single family detached residences[87] while the PFPC rating covers

[85] The most recent FUS reviews from late 2013 and early 2014 show that the name of the organization has recently been changed to "Opta Municipal Consulting Services".

[86] There is on-going consideration by the Fire Underwriters of the two types of classifications: it is possible that, in the not-to-distant future that the two ratings will be combined so that only a single rating system exists, covering both residential and commercial/multi-family properties.

[87] Under the FUS definitions, the DPG ratings generally apply to the following: "One- and Two-Family Detached Dwellings (buildings containing not more than two dwelling units) in which each dwelling unit is occupied by members of a single family with not more than three outsiders, if any, accommodated in rented rooms." Also under this system, a "typical" detached dwelling is a maximum of 3,600 square feet

commercial, industrial and institutional buildings and/or districts, or multi-family residential complexes and generally is applied by the "commercial lines" arm of the insurance industry.[88]

Most residential homeowners and businesses carry fire and general perils insurance and any person with a mortgage is required to maintain such insurance by the mortgagee bank or financial institution. Where a community has a fire department which meets FUS standards for performance, the cost of insurance will be significantly lower than in unprotected or less protected areas. Thus, one aspect of the cost-benefit analysis that underpins the investment required to maintain an FUS-rated fire department is the trade-off between the taxes needed to pay for the department, versus the saving on insurance costs.

With a well-rated fire department, the saving in insurance premiums often will offset, in whole or in significant part, the costs of operating the department. For an individual with a house that is assessed at a replacement cost for insurance purposes of $300,000, a "protected" or "semi-protected" rating will generally result in cost saving on insurance more than $1,000 a year. For commercial properties, significant reductions in insurance rates can be expected when the community obtains a PFPC rating of 7 or better.[89] From the savings enjoyed on insurance, the tax cost of maintaining the service would then need to be deducted to determine the net direct financial benefit (or cost) of having a "rated" department.[90]

By way of example, the following table is sometimes shown in FUS reviews. It shows the amount by which "average" insurance costs drop for commercial insurance, as the PFPC rating improves:

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in size. Fire Underwriters Survey website, "Terms of Reference", http://www.fireunderwriters.ca/dpg_e.asp accessed on 25 March 2014.

[88] Fire Underwriters Survey website, "What is the PFPC" at http://www.fireunderwriters.ca/pfpc_e.asp , accessed on 25 March 2014.

[89]Based on Fire Underwriters Survey, "Synopsis: Feasibility of Fire Protective Services within Apex Mountain Resort" (undated [2006**]), at p. 7. PFPC ratings of "8" and above are generally treated as unprotected. It should be noted that the FUS website information on the savings enjoyed by commercial operations from improved fire ratings has become much less specific than in the past. See: Fire Underwriters Survey website, "How the PFPC affects individual insurance policies" at http://www.fireunderwriters.ca/pfpc_e.asp , accessed on 25 March 2014.

[90] The rating system is described in greater detail in the next section. ***It must be stressed that the actual cost for insurance for any homeowner or business varies based on a number of individual and site-specific factors***. While the FUS fire grading for the area has a significant impact, a host of other considerations are also involved in the setting of insurance rates, including matters specific to the individuals or properties involved, or the competitive forces at work in the region. It is also important to note that the insurance value of a dwelling or business is not the same as its assessed value for tax purposes (as the latter incorporates the value of the land as well and the insurance value is based on the cost of building a replacement structure, not its market value).

PFPC	U-Rate percentage decreases
PFPC 10 to PFPC 9	99.2%
PFPC 9 to PFPC 8	96.6%
PFPC 8 to PFPC 7	82.4%
PFPC 7 to PFPC 6	74.4%
PFPC 6 to PFPC 5	63.1%
PFPC 5 to PFPC 4	53.8%
PFPC 4 to PFPC 3	48.0%
PFPC 3 to PFPC 2	47.3%
PFPC 2 to PFPC 1	45.8%

Table 12: Estimated Commercial Insurance Rate Savings

As can be seen in Table 12, ratings improvements do not result in straight-line decreases: from a cost-benefit perspective, moving a rating from PFPC 8 down to ~PFPC 4 provides the optimal savings for residents, and is worthy of consideration on a hard cost-benefit analysis (i.e., amount required to be invested in improving the service, versus saving for owners of commercial, industrial and multi-family properties.)[91] Below PFPC 4, the amount required to be invested to obtain the improved rating likely will outweigh any insurance savings.

A complicating factor is that the ratings applied to a community are not necessarily uniform; also the benefit may vary from industry to industry. FUS considers a series of issues (examined further below), which include distance from the fire hall and availability of water supplies. Thus, the benefits may not be equally enjoyed by all ratepayers.

Methodology Employed

Overall Ratings Weighting: The FUS ratings are weighted against the following four areas of assessment:[92]

- Fire Department: 40%
- Water Supply: 30%
- Fire Safety Control: 20%
- Fire Service Communications: 10%.

[91] The amount of savings can also vary with the particular type of industry or commercial undertaking. See the more detailed discussion of PFPC ratings below. The table gives the average of all savings, across all industry types.

[92] This information is based on various FUS reviews we have examined in work for other clients

The assessment also involves a consideration of the principal fire risks covered by the subject department, including determination of the required fire flows (i.e., water flow requirements for the particular hazards and risks).

The fire department assessment includes a consideration of apparatus, equipment, staffing, training, operations and administration, and the location/distribution of fire halls and fire companies. In this segment of its review, FUS analyzes the effectiveness of the fire department's ability to extinguish fires in all parts of its fire protection area.

Part of that assessment includes a review of the apparatus in use and its suitability for the subject department's fire risks. In general, FUS sets 20 years as the maximum age for front-line use of apparatus by small-medium sized communities. It also has requirements for certain apparatus types (e.g., an aerial device) depending on its assessment of the community's fire risks.[93]

The "Water Supply" section looks at the hydrant system (if present), and considers issues such as water flow, supply reliability and system redundancy, based on criteria set out in its "Water Supply for Public Fire Protection".[94] Where no hydrant system is present or where the hydrant system only covers a portion of the fire protection area, FUS looks at the ability of the fire department to access, load, transport and unload water against the risks faced in the non-hydrant protected area. In such cases, the assessment is usually considered as part of the "Fire Department" analysis.

The "Fire Safety Control" category covers fire prevention programs/public education, fire inspections and building/fire code and bylaw enforcement. FUS will look at whether local government is making effective use of these tools in managing the level of fire risk throughout the fire protection area.

The "Fire Service Communications" category involves an assessment of dispatch services, paging systems and radio communications.

It should be noted that reviews by the Fire Underwriters have undergone some material changes over the last several years. The rating areas have changed somewhat, with new (or more formal) categories and scoring systems being introduced. Some additional factors –

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[93] FUS recommends an aerial device once a community has a water flow requirement that is calculated to exceed 3,300 Imperial gallons per minute or where there are five or more buildings in the community which exceed 3 stories (10.7 metres) in height.

[94] FUS, "Water Supply for Public Fire Protection" (1999), which is available at: http://www.scm-rms.ca/docs/Fire%20Underwriters%20Survey%20-%201999%20Water%20Supply%20for%20Public%20Fire%20Protection.pdf

including a "divergence penalty"[95] and "special hazards" penalty – have also been added. Although material portions of the assessment are subjective, the scoring system used suggests a precision that is difficult support. By way of example, the assessment of the "Fire Department" is now broken into 19 separate sub-categories,[96] each individually weighted and often containing further individual sub-categories within them.

We strongly recommend that any department which is undergoing an FUS review work closely with the reviewers. Departments must ensure that they understand each category of assessment and are comfortable with the ratings that ultimately are given in each area of the report. It is particularly important that fire departments understand how the Fire Underwriters determine the level of fire risk and hazard, as that assessment impacts the determination of (1) how much water the department has to be able to pump; (2) how much apparatus (and what type of apparatus) the department requires; (3) how many firefighters are required; and (4) the location and number of fire halls required.

Ratings System. As noted above, FUS reviews involve two entirely separate rating systems – one for residential properties (DPG) and one for commercial/multi-family properties (PFPC). The DPG rating is calculated on a five-point numerical scale, while the PFPC rating is based on a 10 point scale. In both cases, a "1" is the highest rating achievable. In simplest terms, the goal of an FUS review is to provide insurance companies with a grading of fire protection services provided across a fire protection area.

Insurance companies use the grading rate provided by the FUS as one of a number of factors in determining local fire protection insurance rates. It should be emphasised that the system is quite fluid, and individual insurers can and will set rates based on considerations other than the FUS ratings (either higher or lower, depending on the insurer's perception of actual risk, competitive concerns and other factors).[97] It is up to individual insurance companies to determine what weight they give the FUS grading when determining insurance rates.

DPG Rating. In essence, for residential homeowners the rating system is from 1 – 5 (where "1" is best), with a split at "3", where "3A" means there is an approved hydrant or water supply system, and "3B" means that the department relies on mobile water supplies. From the insurance industry's perspective, the ratings for residential homeowners are generally treated as follows:

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[95] A department is penalized if either its water system is better rated than the fire department itself, or if the fire department is rated better than the water system.

[96] The sub-categories include: Engine Service; Ladder Service; Distribution of Companies; Engine and Ladder Pump Capacity; Design, Maintenance and Condition of Apparatus; Number of Line Officers – Fire Suppression; Total Fire Force Available; etc.

[97] See a list of other factors on the Fire Underwriters Survey website, "How the PFPC affects individual insurance policies" at http://www.fireunderwriters.ca/pfpc_e.asp , accessed on 27 March 2014.

DPG Rating	Insurance Status	Comment
5	Unprotected	No savings on insurance from having a fire department.
4	Semi-protected	Some savings on insurance likely will be enjoyed; in some regions, this rating and "3B" are treated as essentially equivalent.
3B	Semi-protected	This is usually the rating level at which significant cost savings on insurance are enjoyed. This is usually the highest rating available in areas which are not hydrant-protected.
3A; 3B(S)[98]	Protected	Progressively greater savings on insurance. Fully protected status typically means a savings of 50-60% on insurance costs.
2	Protected	
1	Protected	

Table 13: Dwelling Protection Grade Ratings

In general, FUS estimates that a community which achieves fully protected status can enjoy savings on insurance of up to 60% versus communities which are "unprotected".[99] By way of example, in a recent fire master plan we worked on two of the members of council to whom we delivered the report exemplified the difference that the FUS rating makes. In that instance, the fire department's coverage zone was greater than eight kilometres, so that residents outside of the eight kilometres zone did not receive the benefit of a reduced insurance rate. One councilor was paying over $3,000 for fire insurance, while the other was paying less than $1,000 – in relation to properties that the two agreed were otherwise broadly similar, other than the distance from the fire hall.[100]

There are some fundamental location and distance requirements for an area to receive a protected or semi-protected rating:

[98] A rating of 3B(S) is an FUS accreditation for tanker shuttle capability, where a department is able to demonstrate its ability to maintain a specified water flow for a stipulated period of time, using tanker units. It applies to areas which are not hydrant-protected, and must be periodically renewed. This specialty rating is treated by most insurers as being the equivalent of a "DPG 3A" (fully protected) rating.

[99] This estimate is based on statements in various reviews conducted by the FUS, including for the Kootenay Boundary Regional Fire Service (2008) and the Sasamat Volunteer Fire Department (2010).

[100] The example also illustrates a problem where the financial benefits of having a fire department are not equally enjoyed by all taxpayers.

- residents must live within eight kilometres by road of a fire hall (i.e., the measurement is based on distance travelled on the existing road network, not in a straight line from the fire hall); and

- for hydrant protected areas, the residence must be within 300 metres of a fire hydrant (or else the residence is classed based on the community's "non-hydrant protected" rating).[101]

Properties which are more than eight kilometres by road from a fire hall typically are treated as DPG 5 (unprotected). In the case of the Department, where a Fire Underwriters' review has not been conducted for over 30 years, the issue of distance from the fire hall will be an issue. Under its rating system in 1980s, our understanding is that the Fire Underwriters permitted a distance of up to 13 kilometres in rural areas. That 13 kilometre limit is no longer acknowledged on the Fire Underwriters' website or in its accompanying materials and discussion of DPG ratings. When the Department's fire service area is again reviewed, there is a material likelihood that the dwellings which are beyond eight kilometres by road from the fire hall will be downgraded (if that has not already occurred).

Where coverage can be obtained for the Fire Protection Area from one of the neighbouring CRD departments (in other words, in any portions area where the neighbouring department is eight kilometres or less away), it may be useful to establish automatic aid arrangements for structure fires. The Fire Underwriters rate automatic aid agreements highly, and will grant credit for such responses which may well preserve the "DPG 3B" rating for regions where this can be provided.

PFPC Rating. The PFPC rating, which is determined at the same time as the DPG rating, is based on similar factors. The impact of an improved classification varies with the industry and higher risk industries often enjoy greater savings at certain levels – for example, as the PFPC rating improves from 8 to 7.[102] In the context of other work we have undertaken, we have reviewed information from FUS which suggests that for each level of improvement in the PFPC classification, the average commercial insurance cost for a typical area will drop by approximately 4 to 15%, depending on which level of the scale one is on (see Table 12, above).

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[101] This distance can be extended to 600 metres if a department is qualified by FUS as capable of "large diameter hose-lay". See: FUS, *Accreditation of Alternate Water Supplies for Public Fire Protection* (December 2010), at http://www.fireunderwriters.ca/doc/FUSBulletin-2010.12.10-AlternativeWaterSupplyAccreditation.pdf, accessed on 25 March 2014.

[102] Based on other FUS reviews, where for one department's area, industry classified as "Manufacturing (Wood)", showed a 17% insurance cost saving when moving from a PFPC 8 to PFPC 7, which contrasted with only 3 – 4% savings enjoyed by less risky undertakings.

The following factors or areas of assessment are integrated into the PFPC analysis: [103]

1. Fire Risk, including analysis of required fire flows for individual buildings, building groups and zones of similar risk (Fire Flow Demand Zones) of the community;

2. Fire Department, including apparatus, equipment, staffing, training, operations and geographic distribution of fire companies;

3. Water Supply system, including source to distribution analysis, redundancy factors, condition and maintenance of various components, and storage volume;

4. Fire Prevention and Fire Safety Control programs, including public education, codes/bylaws implementation and use of codes/bylaws in managing the level of fire risk throughout communities; and

5. Emergency Communication systems, including telephone systems, telephone lines, staffing, and dispatching systems.

The PFPC rating is essentially a benchmarking against various standards or requirements in each category and in relation to other communities.

For a commercial property, the application of the rating system depends on the distance from the fire hall and, in hydrant protected areas, distance from a fire hydrant. This can result in "split ratings" for a fire protection area. The FUS describes split ratings as follows: [104]

> "In many communities, FUS develops a split classification (for example, 5/9). Generally, the first class, (Class 5 in the example) applies to properties insured under Commercial Lines within five road kilometres of a fire station and within 150 metres of a fire hydrant. The second class (Class 9 in the example) applies to properties insured under Commercial Lines within five road kilometres of a fire station but beyond 150 metres of a hydrant. FUS assigns Class 10 to properties insured under Commercial Lines that are located beyond five road kilometres from the responding fire station."

It should be noted that newer FUS reviews, in addition to introducing more detailed ratings and are increasingly focusing on fire prevention, fire education and the importance of bylaws which support good fire protection practices (e.g., sprinklering requirements, a well-considered fire inspection program, etc.).

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[103] From: Fire Underwriters Survey website, "How the PFPC grading system works", at http://www.fireunderwriters.ca/pfpc_e.asp, accessed on 28 March 2014.

[104] From: Fire Underwriters Survey website, "Split Classifications", at http://www.fireunderwriters.ca/pfpc_e.asp, accessed on 28 March 2014.

Summary: The principal benefit of having an effective, well-equipped and well-trained fire department is that it will materially improve the life safety of residents in its fire protection area. From a financial perspective, however, it also is critical to understand that a fire department which is well rated by the Fire Underwriters will reduce insurance costs for both residents and commercial undertakings. The savings on insurance will typically more than cover the cost of maintaining the fire department – particularly where the service is provided by a volunteer or composite department. There is therefore a good business case for investing in the fire department to maintain and, potentially, to improve the District's fire insurance rating.

Summary of Recommendations

The following is a summary of the recommendations made in the body of this report. The recommendations should be not be reviewed in isolation, but examined in the context of the detailed discussion contained above.

Recommendation 1:	The Department and the District should review and update the Fire Services Bylaw, as noted in the mark-up provided to the Department and outlined in the section above. Any revised Fire Services Bylaw should be reviewed with the District's usual legal counsel.
Recommendation 2:	That the Department hire a fulltime Deputy Fire Chief to act as the Training Officer, carry some of the fire inspection load, assist the Fire Chief with his duties and take over the Fire Chief's role in his absence.
Recommendation 3:	That the Department develop and implement a formal succession plan, which identifies each officer position, including its roles, responsibilities and training and experience requirements.
Recommendation 4:	The Department and the District should develop a comprehensive approach to recruitment and retention including developing an effective information campaign for volunteers, reviewing the idea of volunteer benefits and implementing a duty crew system.
Recommendation 5:	The District should develop and implement a more effective recognition program for its volunteers. It also should develop a recognition program for employers, and in particular for those employers which permit their employees to respond to day-time call-outs.
Recommendation 6:	The Department and the District should review other WEPs in the province, and consider developing and implementing a similar program. A WEP would enhance day-time responses and

improve the availability of emergency responders, at a far lower cost than hiring career firefighters.

Recommendation 7: The Department should be provided with part-time administrative assistance at the fire hall to assist with administrative, record keeping and data entry duties. The existing ½ FTE position should be maintained but the individual should be based at the fire hall during the portion of the day (or for the days of the week) during which work for the Department is being performed. The need for further administrative assistance would also need to be reviewed if a WEP is introduced.

Recommendation 8: The Department create a fulltime career Deputy Chief position to undertake all aspects of fire prevention and to assist with training, administrative and other requirements.

Recommendation 9: The Department review its fire inspection schedule and consider re-drafting it based on risk. Inspections on higher-risk properties should be increased; consideration can be given to reducing inspections of low risk properties.

Recommendation 10: The Department start charging fees for all re-inspections and that the fees escalate in cost for each additional re-inspection required for the same property.

Recommendation 11: That the Department install an adequately sized generator to provide the fire hall with an emergency supply of power during power outages.

Recommendation 12: The Department undertake a formal review of the existing facility and the Department's anticipated needs over the next ~10 years, and include plans to upgrade and improve the space in the medium term budget cycle.

Recommendation 13: That the Department in conjunction with the District should investigate the feasibility and potential operational advantages of purchasing an elevated stream apparatus as part of its apparatus replacement program.

Recommendation 14: That the Department in conjunction with the District develop and cost out a long range apparatus and equipment replacement plan to ensure that funding will be available when expenditures are required.

Recommendation 15:	The Department continue the process of developing and updating its OG manual.
Recommendation 16:	The Department develop an operational guideline specific to interior fire attacks including criteria required to be met prior to their commencement. Those criteria should include: the issues involved in the size up by the incident commander; and the minimum experience, training and proficiency requirements of interior attack crews and leaders.
Recommendation 17:	The District and the CRD develop a common approach to managing training for fire service personnel in the south Cariboo area.
Recommendation 18:	The District and Department should actively investigate the potential revenue generating options available with the training site and determine what additional resources or support are required to manage such additional activities.
Recommendation 19:	The Department and District review and update the Department's OH&S program, based on the comments noted in the OH&S section above and mark-up of the related Operational Guidelines provided to the Department.
Recommendation 20:	That the Department implement a functioning Joint Committee, and revise its Operational Guideline related to the Joint Committee as noted in the mark-up provided to the Department.
Recommendation 21:	That the Department implement a functioning WHMIS program and training for its members. In each case (recommendations 19, 20 and 21), the District should review its OH&S obligations with its usual legal counsel.
Recommendation 22:	The Department should document the locations at which radio coverage is problematic and then to consider a remediation strategy.
Recommendation 23:	The Department and the District will be renegotiating the [Fire Protection Area] Agreement with the CRD in the near future. When revising the Agreement, consideration should be given to the matters identified in this section, including: clearly stating the Department's operational powers and authority in the Fire Protection Area; identifying what services are (and any services that are not) to be provided; expressly authorizing the Fire Chief to

act as the LAFC for the Fire Protection Area; and revising the way the service level commitment is expressed.

Recommendation 24: The District and the Department should review the existing Mutual Aid Agreement with the CRD and other parties, and update it taking into account the comments noted in this section. In particular, any revised mutual aid agreement should: clearly describe the powers and authority of responding mutual aid departments to operate in the neighbouring department's jurisdiction; address issues related to incident command and minimum training of responding members; deal with insurance requirements more expressly; and include the dispatch provider in discussions of any changes to the mutual aid arrangements and/or reviews of mutual aid calls which have been carried out.

Recommendation 25: That the District investigate entering into an Automatic Aid Agreement with 108 Mile House Fire Department and Lone Butte Fire Department for the provision of water tenders for structure fires within the District of 100 Mile House

Recommendation 26: That the District work with the CRD and undertake a feasibility study on enhancing functional integration of the fire departments in the area, including considering the possibility of forming a sub-regional fire service in the southern Cariboo Region.

Appendix 1: Acronyms and Definitions and Referenced NFPA Standards

Acronyms and Definitions

BCAS	B.C. Ambulance Service
BCERMS	B.C. Emergency Resource Management System
CAD	Computer Aided Dispatch system
CRD	Cariboo Regional District
District	District of 100 Mile House
DPG	Dwelling Protection Grade—the rating type applied by the Fire Underwriters to residential properties
FF-I, II	Firefighter I, Firefighter II
FMR	First Medical Responder
FSA	*Fire Services Act* (B.C.)
FSLG	Fire Services Liaison Group
FTE	Full time equivalent
FUS	Fire Underwriters Survey
ICS	Incident Command System
IFSTA	International Fire Service Training Association
JPRs	Job Performance Requirements
LAFC	Local Assistant to the Fire Commissioner
MSDS	Material Safety Data Sheets
NFPA	National Fire Protection Association
OG	Operational Guideline
OH&S	Occupational Health & Safety
PASS	Personal Alert Safety System
PEP	Provincial Emergency Program

PFPC	Public Fire Protection Classification—the rating type applied by the Fire Underwriters to commercial and multi-family properties
POC	Paid-on-Call
RIT	Rapid Intervention Team
RMS	Records Management System
SCBA	Self-Contained Breathing Apparatus
WCA	*Workers Compensation Act* (B.C.)
WHMIS	Workplace Hazardous Materials Information System
WUI	Wildland-Urban Interface
WMB	Wildfire Management Branch

Referenced NFPA Standards

- NFPA 1001 - *Standard for Fire Fighter Professional Qualifications* (2013 Edition)
- NFPA 1021 - *Standard for Fire Officer Professional Qualifications* (2014 Edition)
- NFPA 1221 - *Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems* (2013 Edition)
- NFPA 1403 – *Standard on Live Fire Training Evolutions* (2012 Edition)
- NFPA 1720 - *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments* (2014 Edition)
- NFPA 1620 - *Standard for Pre-Incident Planning* (2010 Edition)
- NFPA 1851 - *Standard on the Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting* (2014 Edition)
- NFPA 1852 - *Standard on Selection, Care and Maintenance of Open-Circuit Self-Contained Breathing Apparatus* (2013 Edition)
- NFPA 1901 - *Standard for Automotive Fire Apparatus* (2009 Edition)
- NFPA 1911 - *Inspection, Maintenance, Testing and Retirement of In-Service Automotive Fire Apparatus* (2012 Edition)

- NFPA 1932 - *Standard on the Use, Maintenance, and Service Testing of In-Service Fire Department Ground Ladders* (2010 Edition)
- NFPA 1962 - *Standard for the Inspection, Care, And Use of Fire Hose, Couplings, and Nozzles and the Service Testing of Fire Hose* (2013 Edition)
- NFPA 1971 - *Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting* (2013 Edition)
- NFPA 1982 - *Standards on Personal Alert Safety Systems* (2013 Edition)
- NFPA 1983 - *Standard on Life Safety Rope and Equipment for Emergency Services* (2012 Edition)

Appendix 2: Provincial Wildfire Policies

In addition to WMB's SOG 1.06.01 discussed in relation to the Department's extra-jurisdictional authority, the following policies also should be reviewed and understood by both the District and the Department:

1. Ministry of Forests, Lands and Natural Resource Operations, *Fire Control Responsibilities and Costs* (WMB: 13 April 2012), available at: http://bcwildfire.ca/LegReg/docs/Policy%209_1%20-%20Apr%2013-12%20FINAL%20with%20links%20working.pdf;

2. Province of British Columbia, *British Columbia Coordination Plan for Wildland Urban Interface Fires* (British Columbia: 20 July 2013 – with minor correction dated 12 February 2014), available at: http://embc.gov.bc.ca/em/hazard_plans/WUI-Fire.pdf; and

3. EMB.C. also appears to issue an annual "Response Claim Procedures and Eligibility" Document, as an addendum to its "EMB.C. Interim Policy and Procedures Bulletin". An updated copy of this document should be obtained each year from EMB.C..

Given the District's material interface risk, these policies should be well understood to make certain that both the Department and District staff understand how to activate appropriate provincial resources and to ensure that the correct procedures are followed so that the District will be reimbursed for the cost of wildfire responses where possible.

Appendix 2: Firefighter Training

The following section provides a general overview of the various firefighter training programs accepted in the fire service today. This overview is intended as a general guide and should be used by the Department to develop, in consultation with its fire officers, a program and process that meets its needs. The description below should not be treated as exhaustive; there are many other areas of fire service training that may be needed to supplement these basic requirements.

The Consultants are not affiliated with any one specific training institution nor do we endorse one institution over another. We do recommend that any programs follow NFPA standards as the basis for their programs. As noted above, NFPA training standards are required to be met under the Minister's Order on training made under the *Fire Services Act* (B.C.).

NFPA 1001 Standard for Firefighter Professional Qualifications – Chapter 5 Firefighter I (2013 edition)

(Note: these are not the complete requirements as laid out by the NFPA Standard, but those that the Consultant feels are pertinent to the role of a volunteer firefighter wishing to enhance the Basic Firefighter Level. Should a Department wish its members to achieve the full NFPA Standard for FF-I then of course all requirements would have to be met.)

The firefighter candidate shall meet the general knowledge requirements in 5.1.1, the general skill requirements in 5.1.2, and the job performance requirements ("JPRs") defined in Sections 5.3 Fire ground Operations and 5.5 Prevention, Preparedness, and Maintenance of this standard.

5.1.1 General Knowledge Requirements

The organization of the fire department; the role of the Firefighter I in the organization; the mission of fire service; the fire department's standard operating guidelines (SOGs) and rules and regulations as they apply to the Firefighter I; the role of other agencies as they relate to the fire department; aspects of the fire department's member assistance program; the importance of physical fitness and a healthy lifestyle to the performance of the duties of a fire fighter; the critical aspects of NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, as they apply to the Firefighter I; knot types and usage; the difference between life safety and utility rope; reasons for placing rope out of service; the types of knots to use for given tools, ropes, or situations; hoisting methods for tools and equipment; and using rope to support response activities.

5.1.2 General Skill Requirements

The ability to don personal protective clothing within one minute; doff personal protective clothing and prepare for reuse; hoist tools and equipment using ropes and the correct knot; and locate information in departmental documents and standard or code materials.

NFPA 1001 Standard for Firefighter Professional Qualifications – Chapter 6 Firefighter II (2013 edition)

(Note: these are not the complete requirements as laid out by the NFPA Standard, but those that the Consultant feels are pertinent to the role of a volunteer firefighter wishing to enhance the Basic Firefighter Level. Should the Department wish its members to achieve the full NFPA Standard then of course all requirements would have to be met.)

The Firefighter candidate shall meet the general knowledge requirements in 6.1.1, the general skill requirements in 6.1.2, the JPRs defined in Sections 6.2 Fire Department Communications, 6.3 Fire ground Operations, 6.4 Rescue Operations, 6.5 Prevention, Preparedness, and Maintenance of this standard, and the requirements defined above for Firefighter I.

6.1.1 General Knowledge Requirements Responsibilities of the Firefighter II in assuming and transferring command within an incident management system, performing assigned duties in conformance with applicable NFPA and other safety regulations and AHJ procedures, and the role of a Firefighter II within the organization.

6.1.2 General Skill Requirements The ability to determine the need for command, organize and coordinate an incident management system until command is transferred, and function within an assigned role in an incident management system.

The fire ground operational requirements of the NFPA 1001 Standard, Sections 5.3 (FF-I) and 6.3 (FF-II), require that candidates are capable of a number of operational skills; of those the following are related to live fire operations:

1) attack a passenger vehicle fire operating as a member of a team;
2) extinguish fires in exterior Class A materials;
3) attack an interior structure fire operating as a member of a team;
4) extinguish incipient Class A, Class B, and Class C fires, given a selection of portable fire extinguishers;
5) turn off building utilities;
6) combat a ground cover fire operating as a member of a team;
7) extinguish an ignitable liquid fire operating as a member of a team;
8) coordinate an interior attack for the given level of the fire (e.g., attic, grade level, upper levels, or basement);
9) control a flammable gas cylinder fire operating as a member of a team; and
10) protect evidence of fire cause and origin.

B.C. Basic Fire Fighting Program

The B.C. Basic Fire Fighting Program allows departments to demonstrate that their firefighters possess the minimum firefighter skills within the requirements of the NFPA 1001 Standard to enable them to function at a basic level as team members under direct supervision of a qualified officer while engaged in exterior operations.

The topics included are: (referenced to the IFSTA Essentials of Firefighting Manual, 5th edition)

- Fire Fighter Safety (IFSTA chapter 2)
- Personal Protection Equipment & Self Contained Breathing Apparatus (IFSTA chapter 5)
- Rope and Knots (IFSTA chapter 7)
- Ladders (IFSTA chapter 10)
- Ventilation (IFSTA chapter 11)
- Fire Hose, Fire Streams and Appliances (IFSTA chapter 13 and 14)
- Water Supplies (IFSTA chapter 12)
- Fire Behaviour (IFSTA chapter 3) (optional)

The B.C. Basic Fire Fighting Program was intended to provide a consistent standard for British Columbia volunteer fire department members with the basic training required to serve their communities and provide credit toward NFPA 1001 FF-I and FF-II when done as part of an accredited NFPA 1001 Firefighter program.

Appendix 3: Live Fire Training

The following are outlines of what a suitable live fire training program should entail to align with the fire ground operational requirements for FF-I (live fire I) and FF-II (live fire II) of the NFPA 1001 standard and of Fire Officer-I and Fire Officer-II (live fire III) of the NFPA 1021 Standard. All or some of these requirements may be included in the exercises based on the desired outcome of the training program as determined by the Fire Chief.

Live Fire Level I

A firefighter completing live fire level I training will have developed the knowledge and practical skills/techniques to function safely and effectively as a member of a firefighter team and be able to demonstrate the following:

1) Attack a passenger vehicle fire operating as a member of a team, given personal protective equipment, an attack line, and hand tools, so that hazards are avoided, leaking flammable liquids are identified and controlled, protection from flash fires is maintained, all vehicle compartments are overhauled, and the fire is extinguished.

2) Extinguish fires in exterior Class A materials, given fires in stacked or piled and small unattached structures or storage containers that can be fought from the exterior, attack lines, hand tools and master stream devices, and an assignment, so that exposures are protected, the spread of fire is stopped, collapse hazards are avoided, water application is effective, the fire is extinguished, and signs of the origin area(s) and arson are preserved.

3) Attack an interior structure fire operating as a member of a team given an attack line, ladders when needed, personal protective equipment, tools, and an assignment, so that team integrity is maintained, the attack line is deployed for advancement, ladders are correctly placed when used, access is gained into the fire area, effective water application practices are used, the fire is approached correctly, attack techniques facilitate suppression given the level of the fire, hidden fire are located and controlled, the correct body posture is maintained, hazards are recognized and managed, and the fire is brought under control.

4) Extinguish incipient Class A, Class B, and Class C fires, given a selection of portable fire extinguishers, so that the correct extinguisher is chosen, the fire is completely extinguished, and correct extinguisher-handling techniques are followed.

5) Turn off building utilities, given tools and an assignment, so that the assignment is safely completed.

6) Combat a ground cover fire operating as a member of a team, given protective clothing, SCBA if needed, hose lines, extinguishers or hand tools, and an assignment, so that

threats to property are reported, threats to personal safety are recognized, retreat is quickly accomplished when warranted, and the assignment is completed.

Recommended prerequisite knowledge and skills for Live Fire I training are:

- Fire Fighter Orientation and Incident Organization (IFSTA chapter 2)
- Firefighter Safety and Incident Communications (IFSTA chapter 2)
- Fire Behaviour (IFSTA chapter 3)
- Personal Protection Equipment and Self Contained Breathing Apparatus (IFSTA chapter 5)
- Portable Fire Extinguishers (IFSTA chapter 6)
- Basic Rope and Knots (IFSTA chapter 7)
- Basic Search and Rescue (IFSTA chapter 8)
- Basic Forcible Entry (IFSTA chapter 9)
- Ladders (IFSTA chapter 10)
- Ventilation (IFSTA chapter 11)
- Water Supplies (IFSTA chapter 12)
- Fire Hose, Fire Streams and Appliances (IFSTA chapter 13 and 14)

Live Fire Level II

The firefighter completing live fire level II training will have developed the knowledge and practical skills/techniques to function safely and effectively as a member of a fire fighter team, as a tactical team leader at common residential fires and small business fires (with sufficient fire ground experience and/or the determination of the fire chief) and be able to demonstrate the following:

1) Extinguish an ignitable liquid fire, operating as a member of a team, given an assignment, an attack line, personal protective equipment, a foam proportioning device, a nozzle, foam concentrates, and a water supply, so that the correct type of foam concentrate is selected for the given fuel and conditions, a properly proportioned foam stream is applied to the surface of the fuel to create and maintain a foam blanket, fire is extinguished, re-ignition is prevented, team protection is maintained with a foam stream, and the hazard is faced until retreat to safe haven is reached.

2) Coordinate an interior attack line team for accomplishment of an assignment in a structure fire, given attack lines, personnel, personal protective equipment, and tools, so that crew integrity is established; attack techniques are selected for the given level of the fire (e.g. attic, grade level, upper levels or basement); constant team coordination is maintained; fire growth and development is continuously evaluated; search, rescue, and ventilation requirements are communicated or managed; hazards are reported to the attack teams; and incident command is apprised of changing conditions. (At common residential fires and small business fires in the fire department's district. Complex or large interior fire management should be left to the fire officers)

3) Control a flammable gas cylinder fire, operating as a member of a team, given an assignment, a cylinder outside of a structure, an attack line, personal protective equipment, and tools, so that crew integrity is maintained, contents are identified, safe havens are identified prior to advancing, open valves are closed, flames are not extinguished unless the leaking gas is eliminated, the cylinder is cooled, cylinder integrity is evaluated, hazardous conditions are recognized and acted upon, and the cylinder is faced during approach and retreat.

Recommended prerequisite knowledge and skills for Live Fire II training are:

- Live Fire I
- Fire Control (IFSTA chapter 15)
- Fire Ground Radio Communication (IFSTA chapter 19)
- Sufficient fire ground experience and/or the determination of the fire chief

Live Fire Level III

The firefighter completing live fire level III training will have developed the knowledge and practical skills/techniques to function safely and effectively as a tactical team leader and as an incident commander involved in managing, planning, and deployment at multi-unit common residential fires and small business fires (with sufficient fire ground experience and/or the determination of the fire chief) and be able to demonstrate the following:

Given an emergency incident requiring multiple-unit operations, prepare an incident action plan by determining the appropriate strategic goals and tactical objectives, so that the required resources are determined and the resources are assigned and placed to mitigate the incident by applying the Incident Command System (ICS) and utilizing an accountability system to ensure the whereabouts of all personnel assigned to the incident.

Appendix 4: Required Fire Department Records

This Appendix provides a general outline of the categories of records fire departments should, and in many situations are required, to maintain. This outline should not be treated as exhaustive nor is it intended that the reader solely rely on the information contained below. It is strongly recommended that Department review the requirements contained in Part 31 (Firefighting) of the Regulation under the WCA and the appropriate NFPA and ULC standards for specific recommendations and requirements on maintenance of records.

Under section 31.9 of the Regulations, a fire department must keep the test and inspection records required by WorkSafe BC at the workplace for inspection by an officer or the joint committee or worker health and safety representative, as applicable.

1. Apparatus Maintenance

Fire department apparatus must be maintained by appropriately certified personnel. Under NFPA 1911, vehicles should be maintained by individuals who are certified as emergency vehicle technicians. Records need to be maintained on all vehicle maintenance and repairs, as well as any failures in any part of the apparatus. The records required include:

- Annual pump testing
- Weekly apparatus checks
- Apparatus maintenance and repairs
- Apparatus equipment failures.

NFPA 1911 – Inspection, Maintenance, Testing and Retirement of In-Service Automotive Fire Apparatus, 2012 Edition.

2. Driver Training Records

Driver training is critical to the safety of both department members and the public. Departments are required to ensure that members operating apparatus have all appropriate licensing (including, where required, air brake certification). Records required to be maintained include the following:

- Initial driver training and certification
- Annual driving training records
- Yearly driver abstract
- Written operational guidelines relating to the operation of firefighting vehicles during emergency and non-emergency travel.

NFPA 1451 – Standard for a Fire Service Vehicle Operations Training Program, 2013 Edition.

Regulations, section 31.5(e).

3. member Training Records (individual records)

Maintenance of appropriate training records is crucial for fire departments. Records should be stored in a manner that enables the department to readily confirm the specific training levels of each individual member. Back-up copies of the records should also be maintained off-site. In the Clearwater incident, the lack of adequate training records led both WorkSafe BC and the Coroner to conclude that the department members conducting the interior attack lacked the training necessary for the operations that they undertook – even though the Fire Chief maintained that both members of the interior attack team had the training needed for the roles they played.

The records for specific areas of training should be maintained for each individual member and should show:

- Levels of recruit and probationary training achieved and when accomplished
- Training sessions attendance (date and hours involved)
- Additional yearly formal training (including records of weekly and special training sessions and all certifications attained)
- Ongoing yearly maintenance training in the various areas (to retain the levels of knowledge and skills achieved)

NFPA 1001 – Standard for Firefighter Professional Qualifications, 2013 Edition

Equipment Maintenance and Repair (General)

4. Ground Ladder Testing Records

Ground ladder failures during fire-ground activities, while relatively rare, have the potential to cause major injuries and possible deaths to both firefighting personnel and rescue victims during emergency operations. Unlike standard industrial ladders, fire service ground ladder must be capable of holding several people, including rescue personnel (with full PPE) and victims, from elevations of two or more stories.

Individual records and test results must be maintained for all ground ladders in use by a department. These records include:

- Annual inspection and testing
- Regular cleaning and inspection

NFPA 1932 – Standard on the Use, Maintenance, and Service Testing of In-Service Fire Department Ground Ladders, 2010 Edition.

WCB Regulations, section 31.37 (Ground Ladders).

5. Hose testing records

Although an onerous task, annual hose testing is highly recommended. In addition, individual lengths of hose should be tracked throughout its in-service life. Fire hose failure during emergency incidents is greatly reduced through annual testing. The ideal place for fire hose to fail is at the fire hall during testing. Records should include:

- Records for individual hoses including in-service date, damage and repairs
- Annual inspection and testing.

NFPA 1962 – Standard for the Inspection, Care, and Use of Fire Hose, Couplings, and Nozzles and the Service Testing of Fire Hose, 2008 Edition.

6. Self-Contained Breathing Apparatus (SCBA) and PASS[105] Devices

SCBA and PASS alarms are life critical safety devices for firefighters. In the Clearwater incident, both the records keeping and equipment maintenance practices of the department were criticized. The department lacked the necessary maintenance and repair records for its SCBA, the equipment that was used failed in subsequent testing conducted by a third party, and there was evidence of improper maintenance of the units involved.[106] WorkSafe BC requires that service and repair of SCBA units must be by qualified persons.

The following records need to be maintained:

- Annual SCBA pack testing
- Annual and weekly pass alarm testing
- Bottle hydrostatic testing in accordance with *CSA Standard CAN/CSA-B339-96, Cylinders, Spheres, and Tubes for the Transportation of Dangerous Goods*
- Regular inspections of all SCBA components. The inspection of compressed air cylinders must be conducted in accordance with *CSA Standard CAN/CSA-Z94.4-02, Selection, Use, and Care of Respirators*
- Fit testing is required: (a) before initial use of a respirator, (b) at least once a year, (c) whenever there is a change in respirator face piece, including the brand, model, and size, and (d) whenever changes to the user's physical condition could affect the respirator fit
- Appropriate medical certification showing fitness to use SCBA, where required (see OSHR, s. 31.20)
- Complete maintenance and repair records for each self-contained breathing apparatus and all air cylinders must be kept in accordance with the requirements of *CSA Standard*

[105] Personal alert safety system – a device which sounds an alarm when a firefighter is down.

[106] Schapansky Inquiry, at pp. 4, 5-6. The SCBA units worn by Schapansky and his partner were examined by the National Institute of Occupational Health and Safety in the US.

CAN/CSA-Z94.4-02, Selection, Use, and Care of Respirators (section 10.3.3.2.2-b to f, inclusive).

CSA Standard CAN/CSA-Z94.4-02, *Selection, Use, and Care of Respirators*

NFPA 1852 – Standard on Selection, Care and Maintenance of Open-Circuit Self-Contained Breathing Apparatus (SCBA), 2008 Edition.[107]

NFPA 1982 – Standards on Personal Alert Safety Systems, 2007 Edition.[108]

Regulations, sections 31.19 to 31.26 (Respirators).

Regulations, section 31.18 (PASS alarms).

7. Personal Protective Equipment

Personal protective equipment includes turnout gear, helmets, hoods, boots, gloves and goggles. Aside from effective training, PPE is the most important tool a firefighter needs to do his/her job safely. The proper care, through regular inspection and cleaning should be the first priority of all fire service personnel.

- The employer must have operational guidelines governing the inspection of protective clothing and equipment at regular intervals
- The equipment should be identifiable
- Procedures for cleaning and drying clothing must be in accordance with the manufacturer's instructions
- Records of date of purchase, assignment and date for replacement must be maintained
- Records of regular cleaning, inspection and repair of all personal protective equipment should be maintained.
- Turnout gear older than 10 years must be replaced.

NFPA 1851 – *Standard on the Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting (*2008 Edition)

NFPA 1971 - *Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting* (2013 Edition)

8. Rescue Ropes

Rescue ropes are defined as "designated rescue ropes" used to lift, carry, support rescue personnel and rescue victims during emergency incidents such as high angle, swift water

[107] This standard is scheduled to be updated by the NFPA in 2013.

[108] This standard is scheduled to be updated by the NFPA in 2013.

rescue, confined space rescue etc. Rescue ropes are not standard general purpose fire service ropes used during fire ground or emergency incidents to lift tools, secure equipment or tow vehicles. The following records must be maintained for all dedicated rescue ropes

- Records of date of purchase
- Dates of each use, damage, cleaning and repair.

NFPA 1983 – Standard on Life Safety Rope and Equipment for Emergency Services, 2012 Edition.

WCB Regulations, section 31.17.

Appendix 5: Consultant Resumes

Dave Mitchell

Dave Mitchell retired as Division Chief, Communications in 1998 from Vancouver Fire & Rescue Services following a career spanning 32 years. During this time he was responsible for managing the emergency call taking and dispatch for the Vancouver and Whistler Fire Departments. In 1997 he managed the transition of dispatch service for the five Fire Departments on the Sunshine Coast from an independent contractor, to Vancouver Fire/Rescue.

In 1998, Dave was hired by E-Comm, Emergency Communications for Southwest B.C. as its first Director of Operations. In this role he was a member of the founding senior management team, and was responsible for the transition of the Regional 9-1-1 Control Centre staff from the Vancouver Police Department to its current location at 3301 East Pender in June 1999. By June 2000 this included the management of approximately 200 call takers, dispatchers and team managers in addition to a ULC listed alarm monitoring service.

He left E-Comm in June 2000 to work as a consultant, and since that time has managed the development of corporate, strategic and operational plans for a number of clients. In addition he has completed a number of fire hall location studies for clients throughout the Province, provided transition management services to Vancouver Fire/Rescue as it implemented a new Computer Aided Dispatch system. In 2004, Dave provided technical advice to the Hon. Gary Filmon as part of the Firestorm 2003 Review. In 2005, along with ICTconsult Inc. he conducted a full review of the radio system for the fire departments on the Sunshine Coast Regional District and in 2006 he conducted a similar review for the Central Okanagan Regional District.

More recently, along with a number of associates he has conducted master fire plans for West Vancouver, Saanich, North Vancouver District, Sidney, Port Moody, North Vancouver City and Pitt Meadows in addition to managing major communications upgrades for E-Comm and the Regional District of Fraser-Fort George along with fire hall location studies for the Fort St. John, Central Saanich and Pitt Meadows Fire Departments. He has also led a number of communication centre reviews for clients such as the Prince George Fire Department, the City of Lethbridge Public Safety Communications Centre and the Toronto Fire Service. He has recently conducted fire services reviews for the Comox Strathcona, Columbia Shuswap Squamish Lillooet and Alberni-Clayoquot Regional Districts. He also was retained by the Fire Commissioner to advise her office in connection with the project in 2009 to develop a region-wide mutual aid agreement that encompassed the Olympic corridor up to Whistler and more recently developed a fire services resource allocation strategy in 2011.

Dave holds a Bachelor of Arts Degree (Geography) from Simon Fraser University in addition to a diploma from their Executive Management Development Program. He is past Chair of the Board of Directors of the Vancouver General Hospital and University of British Columbia Hospital Foundation, a Director of the Justice Institute of British Columbia Foundation, a

member of the National Fire Protection Association (NFPA), the National Emergency Number Association (NENA), the Association of Public-Safety Communications Officials (APCO), the Fire Chiefs' Association of British Columbia (FCAB.C.), the Canadian Association of Management Consultants (CAMC) and is a member of the Public Safety Communications Advisory Committee of Kwantlen Polytechnic University.

Wayne Humphry

Wayne is recently retired from Vancouver Fire/Rescue after a career spanning 31 years. During this time, Wayne served in fire suppression, rising to the rank of Battalion Chief. He also worked extensively with Vancouver Fire's training division where he was seconded as an instructor and Division Chief between 1996 and 2009.

Based on his work in both roles he has extensive experience in fire rescue emergency operations, specialty teams, logistical planning and budgeting, training and development, facilitation, and project creation and management. In addition to his work with Vancouver Fire he has been an instructor at the Justice Institute of B.C., at UB.C.'s Sauder School of Business as well as for Capilano University[109].

Wayne has developed in-house Officer Development seminars including ProBoard certified programs for various career fire departments throughout the province, for Capilano University and the Justice Institute of B.C. as well as a High-Rise Firefighting Manual and Operational Guidelines.

He is an accredited instructor with the Fire Academy and his subject expertise includes Fire Officer Level 1, 2 and 3 programs – Emergency Incident Management (B.C.ERMS/ICS, Command Post and EOC operations, fire behaviour, strategies and tactics); Incident Safety Officer; and Live Fire Exercises Levels 1, 2 & 3. Wayne was also a Fire and Rescue Services Subject Matter Expert for the JI's Critical Incident Simulation Centre's program development for multi-agency, multi-jurisdictional incident management training.

Wayne has worked with DMA on the study examining the issues related to the establishment of a fire department by the Columbia Shuswap Regional District in the Kicking Horse Mountain region. In addition Wayne teaches emergency incident management to a range of clients in B.C. and Alberta including Calgary, North Vancouver District, Burnaby and other fire departments.

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[109] Mr. Humphry has trained fire fighters and officers from a large number of fire departments in B.C. including: Adams Lake, Armstrong-Spallumcheen, Ashcroft, Barriere, Beaver Creek, Burns Lake, Celista, Chase, Comox, Cowichan Bay, Cranbrook, Cumberland, Dawson Creek, Deep Bay, Enderby, Esquimalt, Fernie, Fort St James, Fort St John, Golden, Kamloops, Kelowna, Langford, Langley City and Township, Logan Lake, Loon Lake, Lumby, Malakwa, Mission, Nanaimo, North Saanich, Oak Bay, Peachland, Pemberton, Port Alberni, Port Alice, Prince George, Princeton, Quesnel, Salmo, Sayward, Smithers, Sooke, Squamish, Summerland, Terrace, Vernon, View Royal, West Vancouver, Whistler, Williams Lake, Windermere and Yale.

Ian MacDonald

Ian MacDonald is a former lawyer who practiced international corporate law in Canada and the United Kingdom. Ian started as a lawyer with Davies Ward & Beck in Toronto in 1990 and worked on large corporate transactions in Canada, including corporate financings, shareholder agreements and corporate restructurings and corporate acquisitions. Ian became a partner in Davies Ward & Beck in 1994 and an equity partner in 1996.

After moving to England in 1998, Ian became managing partner of Arnander, Irvine & Zietman, an intellectual property/litigation firm, and had a varied practice advising clients in respect of company formation, shareholder and members' agreements, corporate financing, governance issues, and privacy matters. He also did extensive work on litigation files related to corporate fraud.

Ian retired as a lawyer in January 2004 and returned to Canada, since which time he has acted as a volunteer director on two boards, acting as the chair of the governance committee for both, and assisted various community groups in developing long term strategic and business plans.

Ian has previously worked with Planetworks Consulting Corporation on the Capital Region Emergency Service Telecommunications project, conducting a full governance review of that organization. With DMA, Ian has worked on the Comox Strathcona Regional District Fire Innovations project, the fire service reviews for the Columbia Shuswap Regional District ("CSRD"), Squamish-Lillooet Regional District, Pitt Meadows and the Alberni-Clayoquot Regional District, and the quality assurance and operations review for the City of Toronto's fire dispatch operations. The work for the CSRD included assisting with the development of bylaws to implement the recommended reorganization. He also has advised the CSRD regarding the development of a new fire department for the Kicking Horse Mountain area, worked with the Alberni-Clayoquot Regional District and City of Port Alberni to develop and implement an automatic aid arrangement between their respective fire departments, and is currently working on projects for the Office of the Fire Commissioner and a fire department audit for the Regional District of Fraser-Fort George.

Geoff Lake

Geoff Lake is a talented professional with over 33 years' experience in the fire service. He has extensive experience in budget analysis, strategic planning/analysis, project management, executive leadership, contract negotiations and organizational change. Applying this experience successfully, results in effective and practical business solutions for organizations.

During his long and successful career in the City of Richmond's Fire-Rescue Department, Geoff rose to the position of Deputy Fire Chief - Administration responsible for the Fire Prevention Division, the Mechanical Division, the Public Education Division, and Communication/ Technology. He managed a $22 million annual budget and was responsible for the procurement of capital equipment including fire apparatus and other fire services equipment.

From 2004 to 2007, Geoff oversaw the completion of two new fire halls, from the initial planning and budgeting stage through design and final construction. These complex projects included conducting fire hall location studies, liaising with the city real estate agent to procure the property, and working with architects, planning and the city project manager to design and oversee construction of the facilities.

With responsibility for the communications and technology requirements of the Department, Geoff oversaw the selection and implementation of the new Records Management System (RMS) and a new Computer Aided Dispatch (CAD) System. He took an active role in setting up Project Fires, a jointly owned/operated fire services RMS currently hosted by E-Comm. In 2003, under Geoff's leadership, Richmond Fire Rescue took a lead role in the emergency services Combined Events Radio Project (CERP). The project provided emergency personnel from all services with the ability to communicate directly with each other prior to arriving on scene.

During his career Geoff had the opportunity to practice labour relations from the perspectives of both a union representative and a senior manager. These experiences have left him with a clear understanding of just what it takes to build and maintain healthy, respectful and beneficial workplace relationships. As Deputy Chief he was responsible for overseeing and implementing interpretation of the collective agreement.

Since retiring from the fire service in 2008, Geoff has been working as a consultant within the public safety industry, most recently spending 13 months as Olympic Coordinator for Safety & Security for the City of Richmond 2010 Olympic Festival Site. He is currently working with Dave Mitchell and Associates on a project involving the inspections and audits of the Regional District of Fraser Fort George volunteer fire departments and on the development of a Fire Services Emergency Resource Mobilization Program for the Office of the Fire Commissioner.

Lorne Mutter

Lorne Mutter served over 30 years with Vancouver Fire and Rescue Services (VF&RS), retiring in late 2003 as the Division Chief, Mechanics. He served in Fire Suppression, Fleet Maintenance and the Training Division where he was a Training Officer, an instructor for VF&RS at the Justice Institute of B.C. and the Acting Division Chief, Training.

Lorne has Trades Qualifications in Commercial Transport Mechanics, Heavy Duty Mechanics, Automotive Mechanics, and Motor Vehicle Inspection; until recently he was qualified as a Master Emergency Vehicle Mechanic. During his tenure with Vancouver Fire he worked with the Justice Institute of B.C. and Surrey Fire developing the Emergency Vehicle Operations Program for B.C. and developed the specifications used by VF&RS for the 18 pieces of heavy fire apparatus purchased between 2006 and 2009. He has vast experience with the development of recommendations and specifications for fire apparatus and equipment, as well as the development of programs for their maintenance and upkeep.