



PEACE RIVER
REGIONAL DISTRICT



Dawson Creek Fire Department Fire Protection Area Review

Dave Mitchell & Associates Ltd.

December a2017

Contents

| | |
|--|----|
| Executive Summary | 3 |
| Background..... | 4 |
| Response Standards—NFPA..... | 5 |
| Response Standards—Fire Underwriters | 7 |
| Analysis | 8 |
| Current Fire Protection Area..... | 9 |
| Response to Incidents | 11 |
| Briar Ridge | 12 |
| South Dawson | 13 |
| Coverage Expansion Issues..... | 15 |
| Official Community Plan | 15 |
| Wildland Interface Risks | 15 |
| Briar Ridge..... | 15 |
| South Dawson | 16 |
| Superior Tanker Shuttle Service Accreditation..... | 16 |
| Mutual Aid Agreement | 17 |
| Apparatus and Staffing | 18 |
| Summary | 20 |
| Recommendations | 20 |
| Briar Ridge | 21 |
| South Dawson | 21 |
| Conclusion | 21 |
| Appendix 1: Superior Tanker Shuttle..... | 22 |

Executive Summary

The Peace River Regional District (the “PRRD”) and the City of Dawson Creek are considering increasing the size of the fire protection area for the Dawson Creek Fire Department (the “DCFD” or the “Department”) for two specific areas, South Dawson and Briar Ridge. The issue of extending a fire department’s service boundaries is primarily driven by the question of whether an effective response, one which increases or improves life safety and the protection of property, is possible.

Responses by the fire service are often time critical and the ability to provide effective rescue and fire suppression declines relative to the time it takes to arrive on scene and commence emergency response activities. Even a response delayed by distance, however, ensures that an incident will be contained, preventing a structure fire from becoming a risk to neighbours or the forest interface. It also will improve life safety for residents. As an additional consideration, the expanded service also may enable some residents to obtain reductions in the cost of their residential insurance premiums.

In evaluating the matter of potentially expanding the fire protection area there are several considerations. The first is that providing the service to an area not currently protected will, at a minimum, ensure that some response is provided to potentially effect rescue and commence fire suppression. Fire propagation within structures is well understood as is the notion that effectiveness in rescue and fire suppression declines with distance travelled, as a result of the time delay involved.

Under the Fire Underwriters Survey (the “FUS”) system, single family residences which are more than eight kilometres from a fire hall are rated as unprotected and generally are not eligible for a reduced premium. Although we are aware of situations in BC where insurance premium relief has been provided for premises up to 13 kilometres from a fire hall, this is not the stated position of the FUS.¹ As such, the possibility of insurance cost reductions for residences which are beyond eight kilometres from the fire hall would need to be confirmed with the individual insurers or underwriters.

The two areas being considered for expansion include properties that, in the majority of cases, range between eight and 15 kilometres from the DCFD fire hall. The report recommends that both areas be fully added. The DCFD is in a position to provide an emergency response and while the effectiveness is attenuated by distance, even for those residences furthest from the hall, it will ensure that a response will be provided, and that the incident will be addressed. Any damage will be limited or confined and the spread of fire prevented. Those properties which are between eight and up to 13 kilometres also may see their insurance costs reduced, although such a reduction is at the discretion of individual insurers and underwriters.

For these reasons, the PRRD should consider expanding the area covered by the DCFD. Increasing the size of a fire protection area should not be unlimited as there is a serious decline

¹ Individual insurance underwriters may differ from the FUS approach.

in effectiveness beyond a certain point. Finally, any expectation of insurance premium savings will need to be confirmed with insurance providers.

In support of the efficacy of the existing fire protection service and the contemplated increase to the fire protection area, it is also recommended that the PRRD and the DCFD collaborate to improve the supply of water for firefighting purposes by seeking to achieve a Superior Tanker Shuttle Service ("STSS") accreditation. This would require integrating the personnel and resources of the Pouce Coupe and Tomslake departments and the coordination of this effort might best be managed by the DCFD. This was reviewed with the DCFD Fire Chief and it is recommended that the complement of the department be increased by an individual to coordinate and provide training and regular exercises.

In addition to adding a trainer, it is recommended that a Rapid Response Engine be added to the DCFD fleet to provide a better response to the properties in Briar Ridge and South Dawson where the houses and other structures have narrow, steep driveways which will provide a challenge for a full-size Engine.

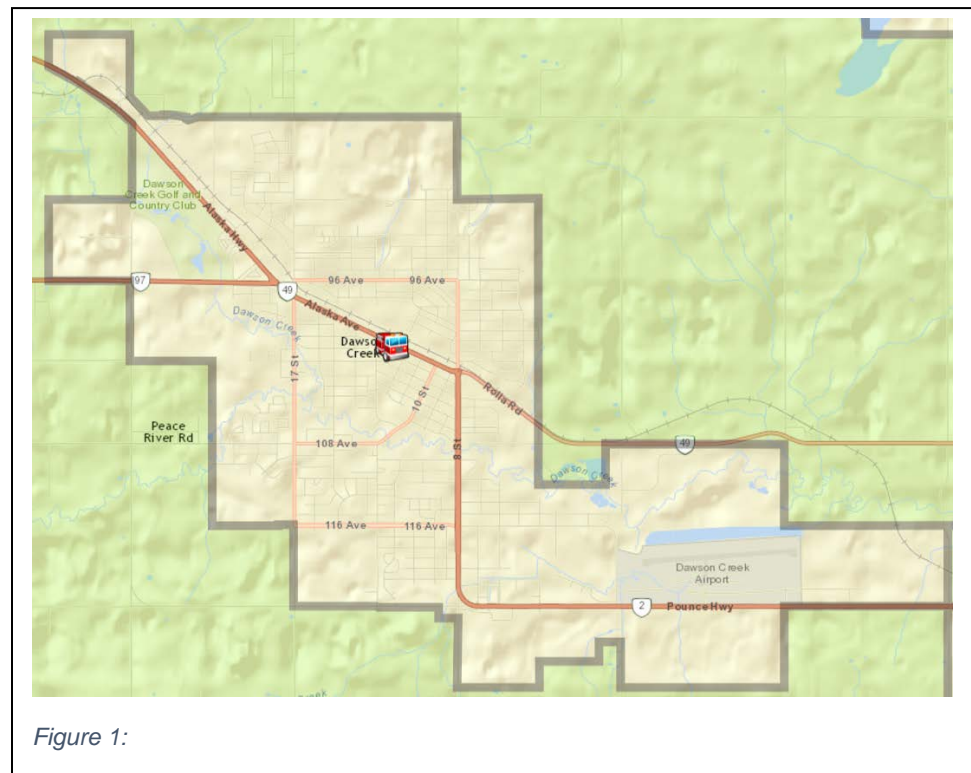
Background

The DCFD is operated by the City of Dawson Creek. The Department operates from a single fire hall adjacent to the City Hall as shown in Figure 1. It also provides response to an extended fire protection area within the PRRD.

The PRRD is considering an extension of the fire protection area to include Briar Ridge and South Dawson, two areas not currently covered by a fire protection agreement.

Enlarging the fire response area

would enable the DCFD to provide a response where none presently exists and will likely result in a reduction in fire insurance premiums for those properties which are less than eight



kilometres from the hall, and may result in somewhat lower premiums for those between eight and 13 kilometres. The FUS provide ratings of fire services based on many factors including distance by road network from a recognized fire hall.² Their stated position is that a residential property which is more than eight kilometres from a recognized fire hall is considered unprotected and thus not discounted in terms of insurance premiums. Individual underwriters, however, are free to approach the issue differently and there are several instances where it is reported that a discount has been provided for a structure up to 13 kilometres in other parts of the province.

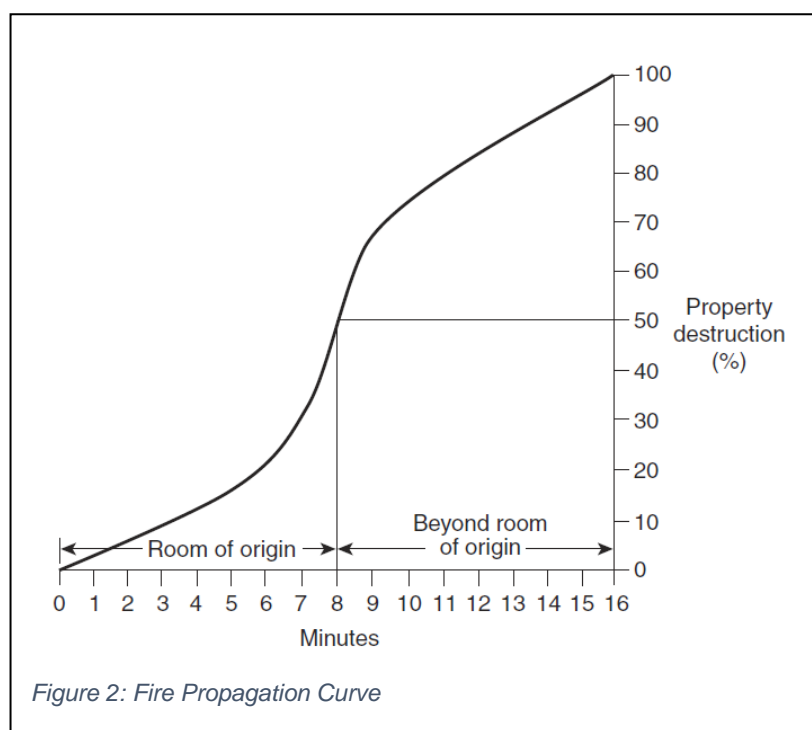
Regardless of whether any discounted premium arises from a response beyond eight kilometres, the arrival of a fire department will provide a level of comfort to the property owner and potentially effect a rescue, prevent the further spread of a fire and limit damage.

Response Standards—NFPA

The standards of service that apply to the fire service include those related to response time objectives. These are defined by the National Fire Protection Association (the “NFPA”) and include time intervals for 911 call handling, dispatch, turnout of crews and travel to the scene.

Each of these will be described in further detail in the following sections. However, a key element for all fire responses is the relationship between time and the degree of fire damage. This is illustrated in Figure 2 which shows the rate of change / percentage of destruction from the time at which a fire ignites.

This fire propagation model is well documented and explains why each element of fire response is critical because at or about eight minutes from ignition a fire will flashover and extend beyond the room of origin. This increases the risk to the resident as well as to the firefighter, and certainly increases the amount of resulting damage.



² http://www.fireunderwriters.ca/home_e.asp

The relationship between the deployment of sufficient firefighters within a defined timeframe relative to fire loss and injury has been documented by the NFPA and this is shown in Table 1. From this it can be seen that confining a fire to the room of origin results in an average dollar loss of \$2,993.

| Flame Spread | Civilian Deaths | Civilian Injuries | Average Dollar Loss per Fire |
|---|-----------------|-------------------|------------------------------|
| Confined fire or flame damage confined to object of origin | 0.65 | 13.53 | \$1,565 |
| Confined to room of origin, including confined fires and fires confined to object | 1.91 | 25.32 | \$2,993 |
| Beyond the room but confined to the floor of origin | 22.73 | 64.13 | \$7,445 |
| Beyond floor of origin | 24.63 | 60.41 | \$58,431 |

Table 1

Fires which extend beyond the room of origin but which are contained to the floor of origin result in an average dollar loss of \$7,445 while fires which extend beyond the floor of origin result in an average dollar loss of \$58,421³.

Similarly, where a fire is held to the room of origin civilian fire deaths do not exceed 1.91 per thousand fires, but where the fire extends beyond the room of origin there are 22.73 deaths per thousand fires. In terms of injuries we expect 25.32 per thousand fires when the fire is held to the room of origin but this increases to 64.13 when the fire extends beyond that.

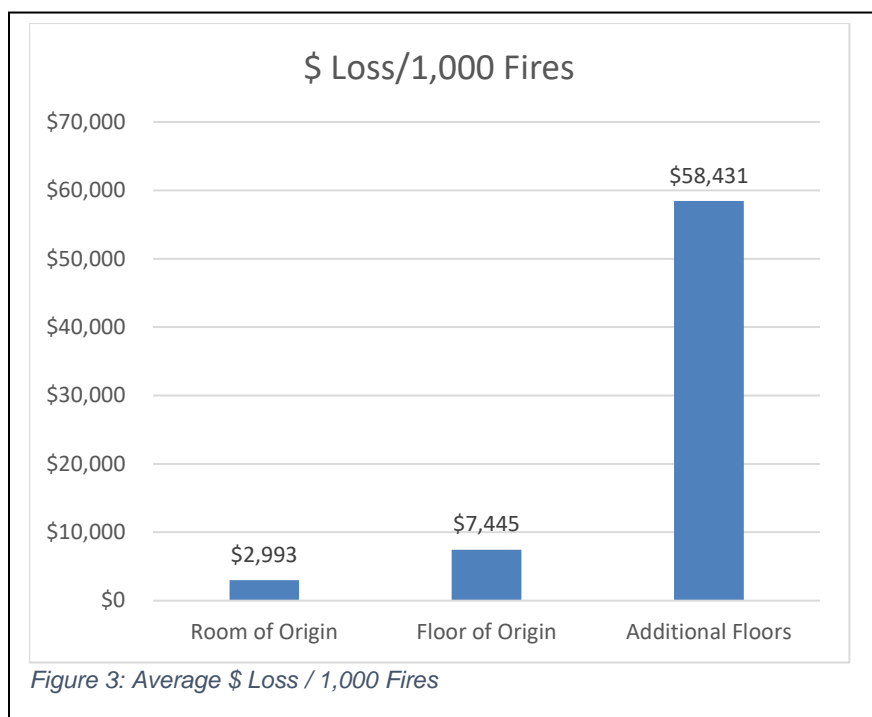
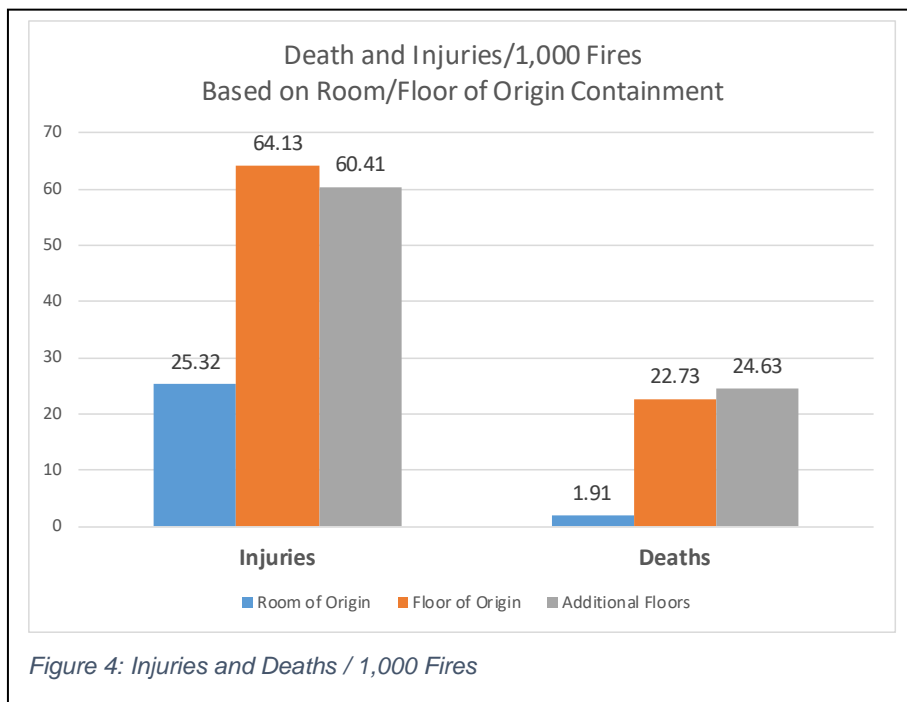


Figure 3: Average \$ Loss / 1,000 Fires

³ The data used in this table is for the United States; there is no similar aggregation of national data in Canada.

This data is shown graphically in Figure 3 in terms of dollar loss per 1,000 fires and in Figure 4 in terms of injuries and deaths per 1,000 fires.

In summary, fire damage, injuries and fatalities are mitigated by the promptest possible arrival of a competent fire department.



Response Standards—Fire Underwriters

The FUS reviewed the DCFD in 2010 and rated the Department in terms of Dwelling Protection Grade (the “DPG”) and Public Fire Protection Classification (the “PFPC”).⁴ The DPG rating was 3A, the PFPC was 5.

The following analysis will consider the extension of the fire protection area beyond its current limits and provide a series of recommendations. To be clear however, the determination of insurance premium savings is solely within the control of the insurance industry, which is generally guided by the FUS rating system.

⁴ Fire Underwriters Survey, *City of Dawson Creek, 2010* (the “FUS Survey”). “DPG” is the rating applied to single family residences, where “1” is the best and “5” is unprotected. The “PFPC” rating is applied to multi-family residences and commercial and industrial properties and “1” is the best, while “10” is unprotected.

Analysis

The PRRD covers a very large area and this analysis is limited to two specific areas which are being considered for addition. For these areas, responses by road network have been generated using 5, 8, 13 and 15-kilometre polygons and these are color-coded as shown in Figure 5.

For comparison, the existing fire protection area outside of Dawson Creek is also displayed to illustrate the areas in which properties are responded to by the DCFD beyond eight kilometres.

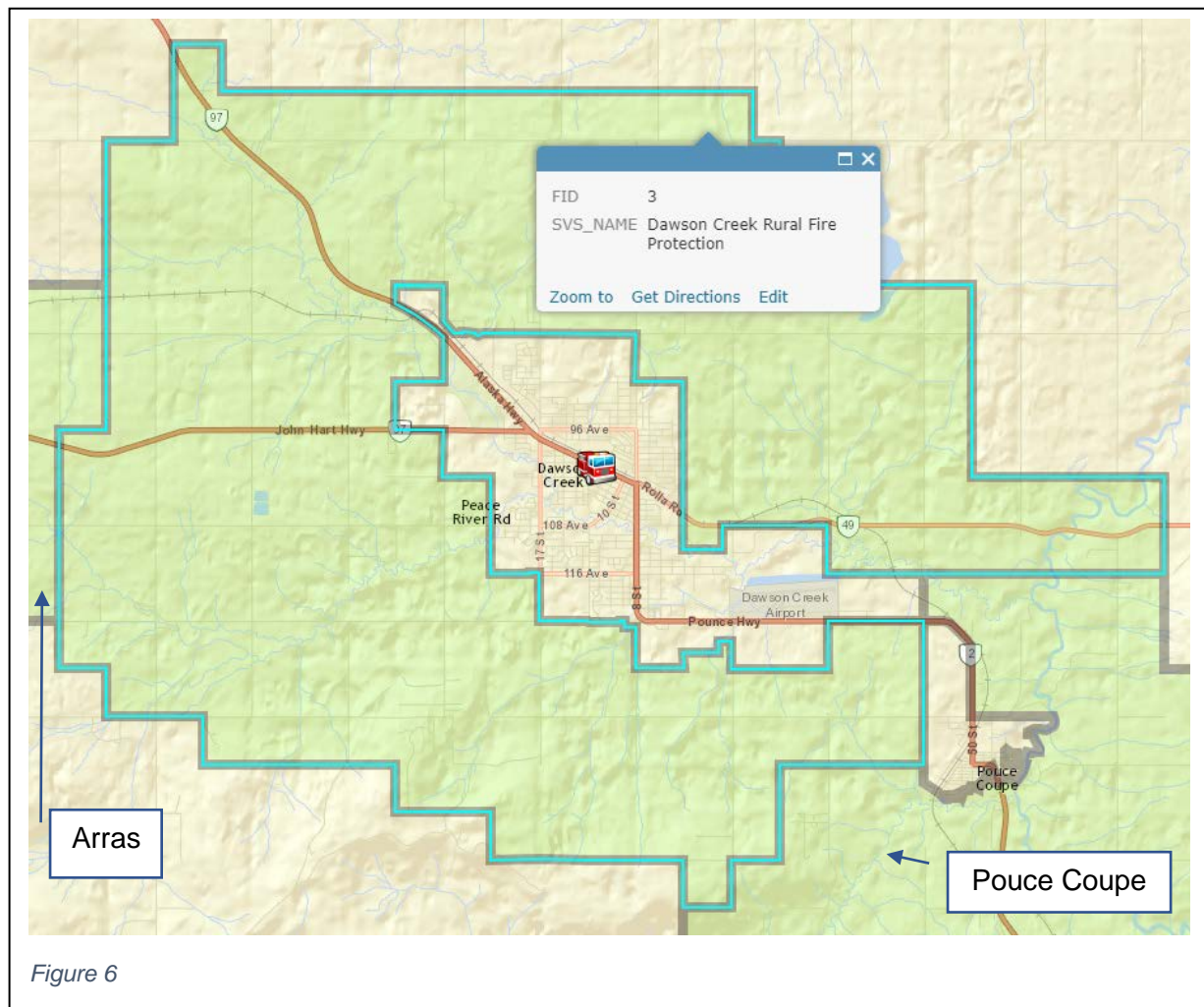
For Briar Ridge and South Dawson, the number of civic addresses (156) has been identified by the PRRD and, based on a multiplier of 2.8,⁵ the number of residents has been estimated. The total number of residents by this measure would be 437.



⁵ The multiplier of 2.8 was provided by the PRRD GIS department, July 28, 2017.

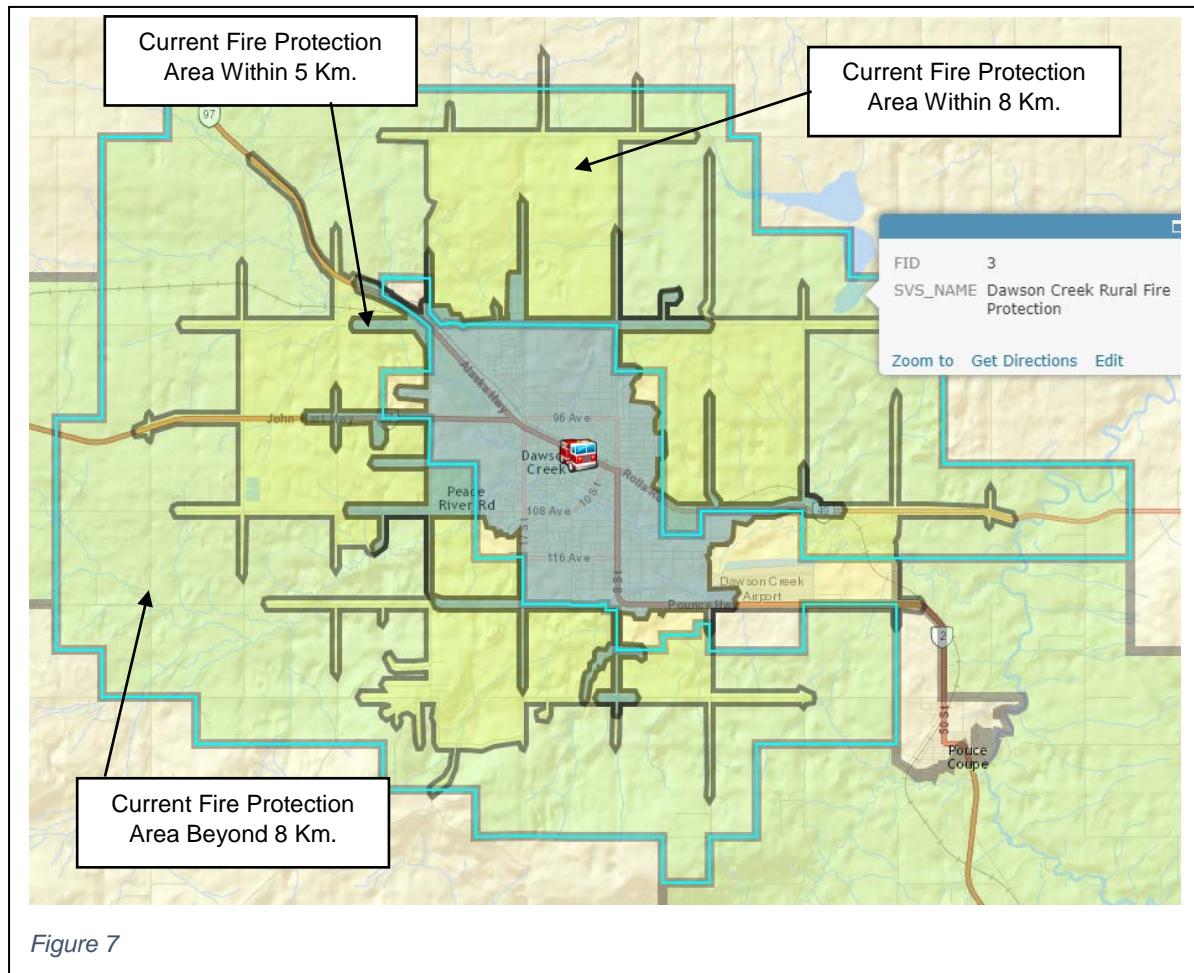
Current Fire Protection Area

The current fire protection area is shown as the light green shaded area outlined in blue as



shown in Figure 6. The light green areas shown to the west and south-east of Dawson Creek are the Arras and Pouce Coupe fire protection areas respectively.

This same area can then be overlaid with the five and eight kilometre polygons as shown in Figure 7

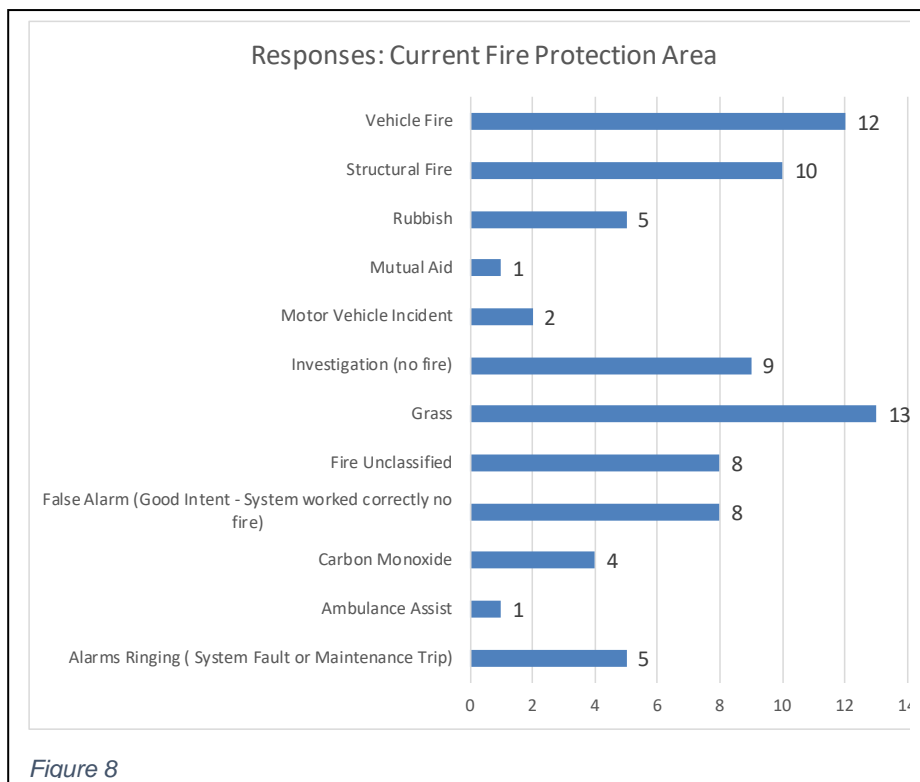


What this illustrates is that the current extended fire protection district includes areas which are beyond eight kilometres; these include Highway 49 to the east, the Hart Highway to the west, Highway 97 to the north-west and Township Line Road to the south-east.

Response to Incidents

As noted, the DCFD currently provides coverage to a portion of the PRRD and one issue to be addressed is the potential impact on the Department from providing additional responses at a further distance.

Responses are for a range of incident types summarized in Figure 8. The majority of these are for single unit calls and/or for a shorter duration than structure fires which require a full commitment by the Department.



Total responses in the fire protection area are slightly less than 4% of the responses by the Department (see Figure 9).

This percentage changes when the responses data is analyzed for structure fires as shown in Figure 10.

In this case, the percentage of responses in the fire protection area is 12.5%.

| | 2012 | 2013 | 2014 | 2015 | 2016 | Total |
|----------------------|------------|------------|------------|------------|------------|--------------|
| Fire Protection Area | 11 | 12 | 12 | 15 | 28 | 78 |
| Dawson Creek | 375 | 355 | 416 | 397 | 414 | 1,957 |
| Total | 386 | 367 | 428 | 412 | 442 | 2,035 |

Figure 9: All Response Types: Average of 16 calls in the Fire Protection Area 2012 to 2016

| | 2012 | 2013 | 2014 | 2015 | 2016 | Total |
|----------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Fire Protection Area | | 2 | 3 | 3 | 2 | 10 |
| Dawson Creek | 16 | 12 | 16 | 15 | 11 | 70 |
| Total | 16 | 14 | 19 | 18 | 13 | 80 |

Figure 10: Structure Fire Incidents

This is shown graphically in Figure 11 and illustrates that there is an impact to the DCFD for responses that are for structure fires as they are likely to result in a commitment of a majority or all of the Department's resources. Where this occurs outside of Dawson Creek there is a degree of elevated risk in terms of the 'next call for service' that may occur in the City.

Briar Ridge

The Briar Ridge area that is being considered for inclusion in the fire protection area is the blue

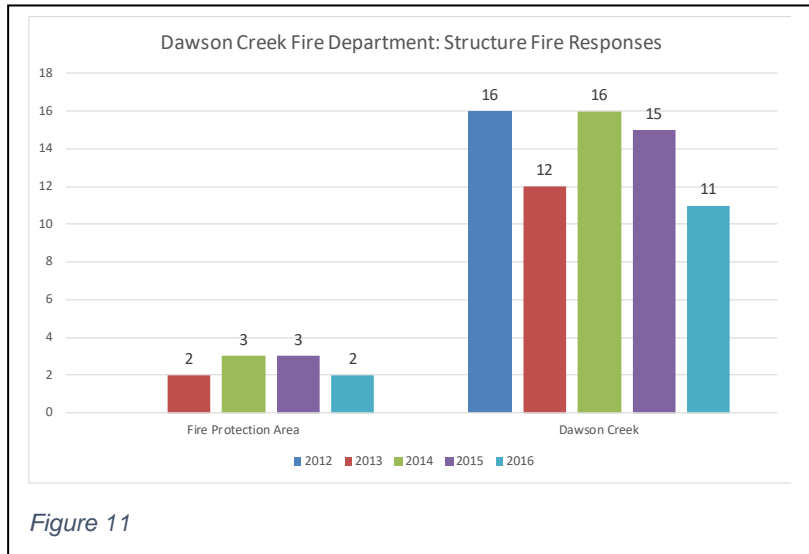


Figure 11

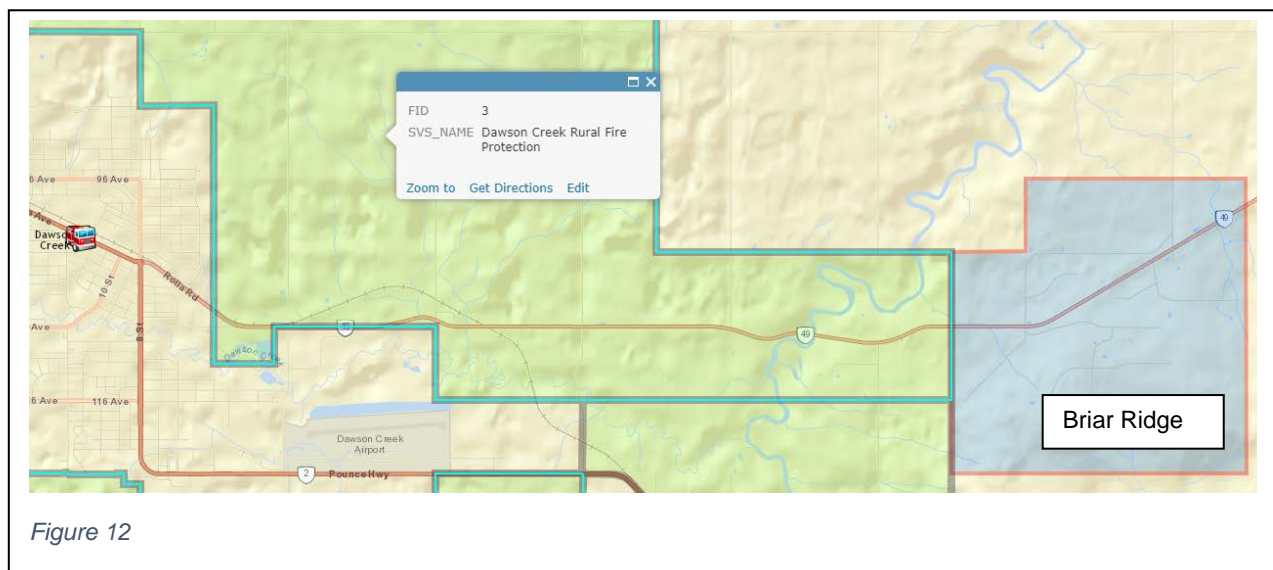


Figure 12

polygon shown in Figure 12 and immediately adjacent to the eastern limit of the current rural fire protection area along Highway 49. The area is approximately 9.8 square kilometres and contains 91 residential properties.

The travel distance to the area exceeds eight kilometres; however, the majority of it is within 13 kilometres (red polygon) and all of it within 15 kilometres (grey polygon) as shown in Figure 13.

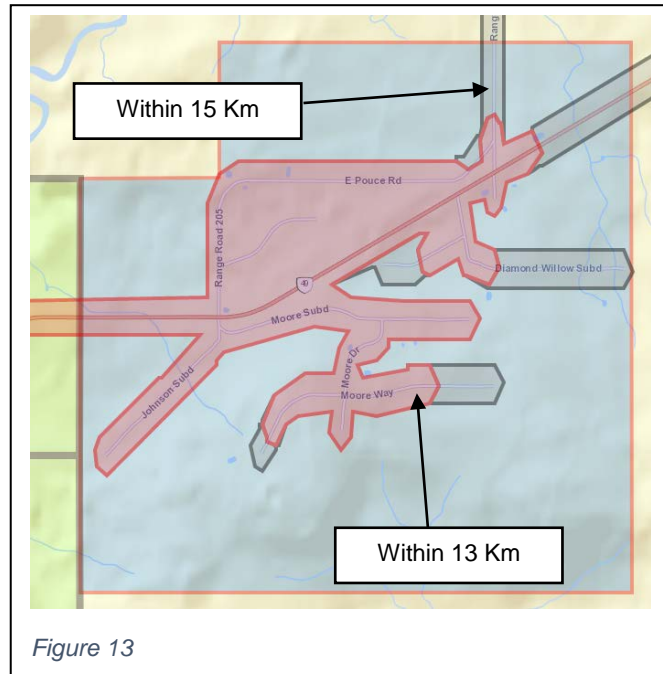


Figure 13

South Dawson

The South Dawson area being considered for inclusion in the fire protection area provided by the DCFD is the red shaded area shown in Figure 14.

The area is approximately 5.9 square kilometres and contains 65 residential properties.

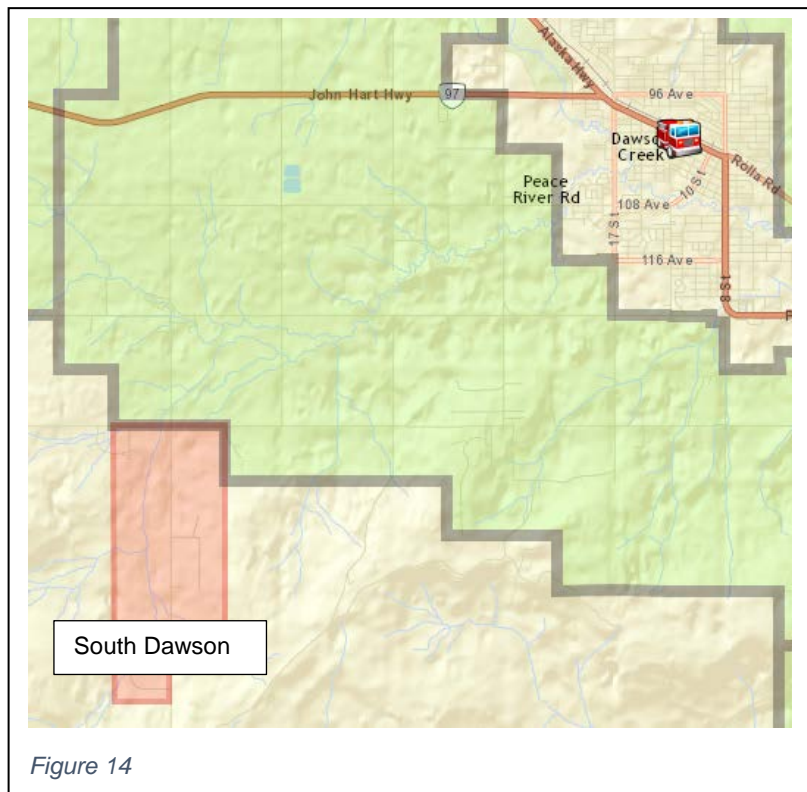


Figure 14

The travel distance to this area exceeds eight kilometres but for some part is within 13 and 15 kilometres as shown in Figure 15.

Travel distance from the Dawson Creek fire hall within 13 kilometres is portrayed by the darker red polygon; 15 kilometres is shown in the grey polygon with the black outline.

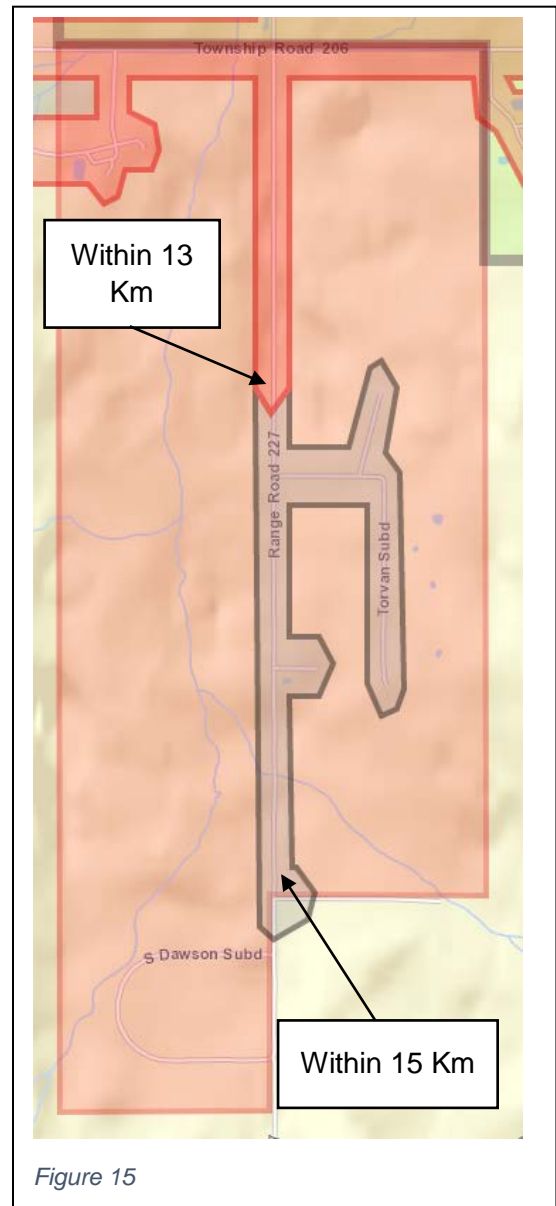


Figure 15

Coverage Expansion Issues

The addition of Briar Ridge and South Dawson into the Dawson Creek rural fire protection area is recommended. Coverage within these two areas will be beyond the eight kilometre travel distance from the fire hall but that is already the case within the existing fire protection area.

Official Community Plan

Expansion of such fire service is also consistent with the South Peace Fringe Area Official Community Plan⁶ at 11.2.1:

11.2.1 Policies

- a. To encourage and support existing Dawson Creek, Pouce Coupe, Arras, and Tomslake rural fire protection service areas as defined on Schedule E, providing services to SPFA residents; and
- b. To facilitate requests for expanded fire protection service areas, where feasible.⁷

An expanded fire service to Briar Ridge and South Dawson would require a primary response by the DCFD which would dispatch a trained crew with an Engine and a Tender for water supply since the area under discussion does not have hydrants. One option for the PRRD and the DCFD to jointly consider is STSS accreditation by the FUS.⁸

Wildland Interface Risks

As part of this review process, Briar Ridge and South Dawson were reviewed including a consideration of the risk posed by the wildland interface.

Briar Ridge

All Briar Ridge homes are classified as being in the wildland interface. Therefore, there is a risk of wildfire to all residents of this area. The wildland interface risk is considered moderate according to the Provincial Strategic Threat Analysis done in 2015. The Briar Ridge area is surrounded by farmland on the north and west which will protect the ridge from most wildfires; the east and south sides of the ridge are composed of C-2 (spruce) and M-2 (aspen) forested areas. In the summer months, the fire risk can reach extreme.

By practicing the Fire Smart principles, the risk from wildland interface fire to home owners can be greatly reduced. The PRRD and the DCFD should focus on public education programs such as Fire Smart to educate the residents of the ridge. As well, there is a need to improve fuel management performance by planning and carrying out forest activities in a manner that reduces future fire risks and the potential impacts of wildfire.

⁶ Bylaw No. 2048, 2012.

⁷ Ibid, page 47.

⁸ http://www.fireunderwriters.ca/superiortankershuttle_e.asp

South Dawson

The South Dawson properties are classified as being in the wildland interface because of they are surrounded by a forest. This forested area is a mixture of C-2(spruce) and M-2(aspen). The South Dawson homes are protected by surrounding farmland outside of the immediate homesteads/forested areas which makes the area fairly safe from large scale forest fires. The wildland interface fire risk would be considered moderate to low most times of the year, but in the summer months the risk can reach extreme.

By practicing the Fire Smart principles, the risk from wildland interface fire to home owners can be greatly reduced. As with Briar Ridge, the PRRD and the DCFD should focus on public education programs such as Fire Smart to educate residents. A planned-out fuel management program should be implemented over a period of years. This practice can greatly reduce future fire risks and the potential impacts of wildfire.

Superior Tanker Shuttle Service Accreditation

STSS accreditation is recognized by the FUS as being equivalent to hydrant protection.⁹ This accreditation has been obtained by a number of fire services in the province and, where they are compliant in terms of water flow and distance, they are equivalent to the DPG Grade 3A which is considered “fully protected”, as opposed to DPG 3B, which is a semi-protected rating. The difference in insurance costs between semi- and fully-protected can be as much as 30%.

For the STSS accreditation to generate an insurance premium discount, the FUS requires the property to be within eight kilometres of a fire station and 5 kilometers of a water supply point. Achieving an STSS accreditation would provide a more secure water supply within the sub-regional area in addition to a potential reduction in fire insurance premiums. Accreditation is normally granted by the FUS for a period of five years¹⁰.

The accreditation would require a minimum of three Tenders of appropriate capacity along with identified water supply points. Achieving this capacity would require an optimized response by the DCFD along with the Pouce Coupe Fire Department and probably also Toms Lake.

Having the ability to provide a consistent water supply by tanker shuttle would be a benefit for both the PRRD service areas which are protected by the DCFD as well as the City of Dawson Creek as this would assure an additional water supply capability regardless of whether accreditation is obtained. Such a cooperative model would also be supported by the ongoing commitment to training within the South Peace that is now possible at the DCFD training site.

⁹ Ibid.

¹⁰ To be clear, STSS accreditation will only be granted by the FUS but regardless of whether accreditation is obtained or not, the ability to provide an enhanced water shuttle will be a benefit to any firefighting response within the PRRD as well as within Dawson Creek.

Mutual Aid Agreement

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; additional water supplies, etc.), and enable them to obtain critical support for major incidents or other situations where a department's resources are overwhelmed by events. Mutual aid agreements require a specific request for assistance from the requesting department, before another department responds to the incident.

There is an existing mutual aid agreement (the "Agreement") between the PRRD, the Tomslake Fire Department Society, the City of Dawson Creek and the Village of Pouce Coupe. The Agreement, made as of 10 November 1999, was intended "...to provide for fire and emergency response mutual aid in Dawson Creek, Pouce Coupe and Tomslake and the rural areas surrounding those communities."¹¹

The Agreement appears to have expired as it was signed 10 November 1999 and was for a five-year term. If the DCFD intends to rely on this arrangement, the Agreement should be renewed and updated. Nevertheless, it appears still to form the basis for mutual aid between the parties. The Agreement is without any specific area limitations and is intended to enable each of the parties to request aid from the other parties when required. Likewise, there is no restriction as to what might be provided by this agreement, as the term Emergency Resources includes "...all persons and equipment held by, in the service of or directly available to the fire services of the Party."¹² That said, the Fire Chief of the Providing Party has full discretion as to what resources to send in response to a request and no liability is intended to attach to any such decision.¹³

Subject to the adoption of a revised mutual aid agreement all available apparatus and personnel are available for deployment at the request of any party to the Agreement. The shared response by apparatus and personnel can be used to achieve an STSS accreditation, though any such arrangement for water tenders would likely have to be developed along with an automatic aid structure, to ensure the timeliness of response.¹⁴ The appropriate number of Tenders for water supply and water supply points should be reviewed and this detail provided to the FUS; as well, they will require information on a coordinated plan to train and implement this enhanced water supply system. Coordination of this training function could be managed by the DCFD, subject to a review of their resources, due to the presence of the training site in Dawson Creek as well as their capacity to manage training overall.

¹¹ As described in the full name of the bylaw authorizing the execution of the agreement by the PRRD: *South Peace Fire Mutual Aid Agreement By-Law No. 1260, 1999*.

¹² Agreement, s. 1, Definitions.

¹³ Agreement, sections 3 and 4.

¹⁴ Under automatic aid, the supporting departments are automatically called out to certain classes of events – e.g., a confirmed structure fire.

Apparatus and Staffing

Fire protection for the existing and proposed additional two areas is recommended with provision for a more flexible response and with a greater capacity for water supply for fire suppression.

In terms of water supply, the fire protection area does not have fire hydrants. All water used for firefighting is that carried to the fire in Tenders, or uses stored water at the scene.

At the present time, the Department has a number of Tenders at least one of which has been provided by the PRRD. However, there is a practical limit to the amount of fire suppression that can be attempted with what is a de facto limited water supply. For this reason, it is recommended that Department and the PRRD procure sufficient additional Tenders and provide fill points to achieve a continuous flow of water; what is termed a Tanker Shuttle Service. It may also be possible to have this accredited by the FUS and if that can be achieved, the insurance industry considers this the same as being within a hydranted area.



Figure 16: Tender

Deploying a tanker shuttle service will require sufficient additional tankers to provide a continuous flow of water at a fire scene. This is a practice that is achieved by a number of fire departments in BC and results in a greatly enhanced ability to provide fire suppression. It also provides a greater margin of safety for firefighters.

The effectiveness of a tanker shuttle service is determined by the provision of water sources and apparatus. It also absolutely requires regular training and drilling with this configuration to ensure the competence and familiarity with all parts of the operation. It is proposed that the DCFD would be in the best position to manage this service in partnership with the PRRD and the surrounding fire departments. If this concept is agreed it will require a more detailed discussion and agreement with the respective fire departments as well as the procurement of sufficient Tenders and a commitment to training time and regular practices. This matter was reviewed with the DCFD Fire Chief and it is proposed that a training position be added to the Department to coordinate and deliver training and regular practices.

As noted earlier Briar Ridge and South Dawson were reviewed by the consultants in terms of the forest interface risk as well as the general risk, types of construction and topography.

In a number of places houses are built on hillsides with relatively steep and narrow driveways that present a

significant challenge in terms of access or egress for a full-size engine. For this reason, it is recommended that the PRRD and the DCFD consider the implementation of a Rapid Response Engine similar to the unit shown in Figure 17. This type of unit is deployed in many fire departments as an additional unit for this specific type of response and often equipped with a Compressed Air Foam System (the “CAFS”) to obtain the maximum utilization of the available provided water supply. The estimated cost for this type of unit based on ones currently deployed in other fire departments is \$200,000.



Figure 17: Rapid Response Engine

Summary

The PRRD has an agreement with the DCFD to provide an emergency response to a defined area outside of the City of Dawson Creek. This agreement generates approximately 11 responses per year by the DCFD.

Increasing the size of the fire protection area to include South Dawson and Briar Ridge would add some 156 additional properties to the DCFD service area, and provide a response by a fire department where none currently exists. A portion of the two areas will be within 13 kilometres of the DCFD fire hall, others are beyond that. In the case of Briar Ridge all properties are within 15 kilometres; in South Dawson, there are perhaps 17 properties that would be just slightly beyond that point.

The area that is currently unprotected also lacks hydrants and so, in its present configuration, the DCFD is somewhat constrained in the amount of water that can be provided by Tender. The mutual aid agreement permits the DCFD as well as the Pouce Coupe and Tomslake fire departments to provide mutual aid without limitation in terms of their resources. Providing a consolidated response by the resources of all three departments with the appropriate numbers of Tenders and sufficient water supply points could allow for an STSS accreditation. Such an accreditation would allow any fire suppression activities in any protected area to operate with a continuous water supply.

Recommendations

It is recommended that the PRRD consider expanding the DCFD fire protection area to include the two areas identified below. It is further recommended that the PRRD and the three fire departments that are parties to the mutual aid agreement be trained and equipped to achieve certification for an STSS accreditation. The training and regular practice to achieve this to be facilitated by an increase of one position for the DCFD.

Accreditation by the FUS should provide an opportunity for lower fire insurance premiums but even without accreditation a tanker shuttle can provide a continuous flow of water for firefighting where this is not currently the situation both within the current fire protection area and the proposed extensions. Implementation will require a review with the respective fire chiefs to ensure a sufficient number of tenders, suitable training and regular practice to ensure a continuous water supply.

In addition to the implementation of a tanker shuttle it is recommended that the DCFD increase its fleet by adding a Rapid Response Unit to provide a first attack capability in Briar Ridge and South Dawson. This type of unit would allow the Department to better cope with many of the residences with long, steep driveways; as well the response time for a smaller vehicle is likely to improve.

Briar Ridge

Briar Ridge is at the east limit of the current fire protection area on either side of Highway 49. There are 91 residences in this area and the majority are within 13 kilometres of the DCFD; all of the remaining area is within 15 kilometres.

South Dawson

South Dawson is at the south-west corner of the existing fire protection area. There are 65 residential properties in this area with few if any within 13 kilometres. The largest portion of the 65 properties is just beyond 13 kilometres with a few just beyond 15 kilometres.

Conclusion

The issue of extending a fire department's service boundaries is primarily driven by the question of whether an effective response, one which increases or improves life safety and the protection of property, is possible. In general, the longer that it takes a fire department to arrive at the scene of an incident, the greater the damage that is likely to occur and the greater the risk of injury or death. Even so, the provision of a confirmed emergency response ensures that an incident will be contained, preventing a structure fire from becoming a risk to neighbours or the forest interface. It also will improve life safety for residents. As an additional consideration, under the FUS system, insurance premiums are reduced where a residential property is located within eight kilometres of a fire hall, with some individual insurers or underwriters extending this protected zone as far out as 13 kilometres.

In the present review, the possible extension of the DCFD fire protection coverage for Briar Ridge and South Dawson is recommended. Most properties within this expanded service area are within 13 to 15 kilometres from the hall. Some portions of South Dawson slightly exceed a travel distance of 15 kilometres from the hall.

Appendix 1: Superior Tanker Shuttle

The following is from the FUS and describes alternate water supplies including Superior Tanker Shuttle (the “STS”).

Fire Underwriters Survey: Superior Tanker Shuttle

Alternative Water Supplies for Public Fire Protection¹⁵

Alternative water supplies include water supplies other than those that are defined as pressurized, municipal-type water supply systems. Generally speaking fire fighting operations are dependent on water and/or other extinguishing agents to succeed. In developed areas, water supplies are provided through a network of distribution pipes, storage and pumping facilities.

In areas without municipal-type water supplies, fire fighting presents a significantly greater challenge. Historically various methods have been utilized to deliver water from some source location to the fireground. The bucket line is an example of one of the historical methods of delivering water to a fire. Generally speaking these types of water supply delivery methods were not effective with respect to reducing property damage.

Since the advent of automotive fire apparatus and road infrastructure, the capacity to move water from a source location to the fire ground has improved dramatically. The fundamental steps in a shuttle operation are as follows:

- set up pumper apparatus at fire event and deliver water from temporary storage facility (ex. portable tank) through fire pump to fire;*
- draft water (from a location where water supplies are known to be reliable and accessible) into a mobile water supply apparatus*
- move water from source location to fire event using mobile water supply apparatus*
- dump water into temporary storage facility (ex. portable tank) at fire event location*
- repeat shuttle cycle.*

Levels of Service

Unrecognized Shuttle Service

If the level of shuttle service provided by a community does not meet the minimum benchmarks set out in NFPA 1142, then the level of service will not be recognized for fire insurance grading purposes.

Standard Tanker Shuttle Service

¹⁵ http://www.fireunderwriters.ca/superiortankershuttle_e.asp, accessed 23 August 2017.

To be recognized, for Standard Tanker Shuttle Service, the fire department must have adequate equipment, training and continuous access to approved alternative water supplies to deliver standard tanker shuttle service in accordance with NFPA 1142, Standard on Water Supplies for Suburban and Rural Fire Fighting. A formal plan for use of alternative water supplies must be in place and available for review detailing the alternative water supply sources and characteristics. To be credited, fire department access to alternative water supplies must be 24 hours per day and 365 days per year. Refill capacity from alternative water supplies using drafting techniques requires a pump that has a minimum capacity of 450 LPM (100 lpm) at 275-415 kPa (40-60 psi).

Accredited Superior Tanker Shuttle Service

Accredited Superior Tanker Shuttle Service is a recognized equivalency to hydrant protection. To be accredited, fire departments must commit to maintaining a high standard of organization, and practice delivering the service regularly. The fire department must be able to show through testing and documentation that it can continuously provide water supplies in excess of the minimum required for hydranted municipal-type water supplies.

To be recognized for Accredited Superior Tanker Shuttle Service, the system of delivery of water supplies must be well-designed and well-documented. The system of delivery must meet all of the requirements specified for Standard Tanker Shuttle Service and must exceed the requirements in several key areas:

- The fire department must be able to prove through testing that the specified requirements of Superior Tanker Shuttle Service can be met.*
- For personal lines insurance, the fire department must be able to deliver a flow rate of not less than 950 LPM (200 IGPM) within 5 minutes of arriving at the test site with the first major piece of apparatus (wheel stop).*
- For commercial lines insurance, the fire department must be able to deliver a flow rate of not less than 1900 LPM (400 IGPM) within 5 minutes of arriving at the test site with the first major piece of apparatus (wheel stop).*
- The fire department must be able to deliver the flow rate which will be accredited within 10 minutes of arriving at the test site with the first major piece of apparatus (wheel stop).*
- The volume of water available for fire fighting must be adequate to sustain the accredited flow rate for a duration in accordance with the Fire Underwriters Survey Water Supplies for Public Fire Protection*

Further Notes

- To be recognized for fire insurance grading purposes, the protected property must be located within:
 - Commercial Lines (PFPC) - 5 km of a fire station AND 2.5 km of an approved water supply point**

- *Personal Lines (DPG) - 8 km of a fire station AND 5 km of an approved water supply point*
- *To be recognized for fire insurance grading purposes, the water-delivery system must be available AND accessible 24 hours per day and 365 days per year;*
- *To be recognized for fire insurance grading purposes, the water capacity of alternative water supply sources must be documented for a 50-year drought cycle and documentation must be available for review. Alternative evidence of reliability of supply will be considered on a case by case basis.*
- *Fire Underwriters Survey treats dry hydrants with suction points in the same way as it treats standard (pressurized) fire hydrants. Any property within 300 metres of a dry hydrant may be eligible for a Dwelling Protection Grade better than 3B, provided the building is within eight kilometres by road of a responding fire station, the fire department is recognized as meeting the criteria for a Dwelling Protection Grade of 3A or better and the fire department has adequate apparatus to effectively utilize the dry hydrant through suction. Testing of the fire department's capacity to utilize the dry hydrant and documentation of the dry hydrant design and maintenance may also be required.*
- *Fire Underwriters Survey may extend credit beyond 300 metres of a fire hydrant when the responding fire company uses large-diameter hose, if the fire department can demonstrate a standard procedure for deployment of hose and also establish a relay operation as needed.*

Historical Note: Fire Underwriters Survey has completed Superior Tanker Shuttle Service Testing since 1989 when the first such test was completed in Ontario. Past systems for testing were somewhat less formal. [See article: 1988 First Accreditation in Canada](#)

Noted changes to Accredited Superior Tanker Shuttle Service

1. *Defined coverage areas*
2. *Formalized requirements for Approved Water Supply Points*
3. *Publication of accredited flow rates to the Canadian Fire Insurance Grading Index*
4. *5 year limit on accreditation period*
5. *Formalized requirements for documentation*
6. *Formalized integration of NFPA 1142*

For communities that are currently accredited to deliver Superior Tanker Shuttle Service, a phase in period of 2 years will be used to allow communities time to prepare for the re-accreditation process.

Note: the full Superior Tanker Shuttle Accreditation document can be downloaded here: [Superior Tanker Shuttle Service Accreditation Protocol](#)

The new protocol is in draft and comments/feedback are welcomed:
feedback@fireunderwriters.ca

Why become Accredited to deliver Superior Tanker Shuttle Service?

Property owners in communities with accredited Superior Tanker Shuttle Service are eligible for improved property insurance rates similar to those in communities with municipal-type water supply systems.

Fire Underwriters Survey does not set property insurance rates, however the organization is responsible for publishing the Canadian Fire Insurance Grading Index which is used by insurers across Canada to base insurance rates upon.

Fire Underwriters Survey is recognized by the Insurance Bureau of Canada as being the only organization authorised to publish fire insurance grades in Canada.

Outside Agencies Testing Tanker Shuttle Service?

Communities that have been tested by agencies other than Fire Underwriters Survey may still be eligible to receive Fire Underwriters Survey accreditation. Documentation of test procedures followed and test results must be submitted to the offices of Fire Underwriters Survey in accordance with the Superior Tanker Shuttle Service Protocol document. Applicants that successfully meet the specified criteria will be accredited and receive certification through the Fire Underwriters Survey' Registry of Accredited Superior Tanker Shuttle Services. The Registry is promulgated to the Fire Insurance Grading Index to ensure that the community's fire insurance grades reflect the accreditation.