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to BTAK.
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July 10, 2019

Salt Spring Fire Protection District Board of Directors
Salt Spring island.

Dear sirs:

RE: Boardwalk Dry Hydrant System

I am writing to support your efforts to install dry hydrants along a future Harbourwalk.

I am very familiar with the district's entire FUS history, the FUS reports present and past, and many other issues relating to the District, as I provided many hours of support to the Linda Lee led group of Trustees a few years back. I am a Professional Engineer and a construction manager of many years.

While I was trying to comprehend the incredibly complex FUS reports, and where the next capital spending should occur, it became very obvious that the answer was on water supply, and water supply only. There are many other places that money could go, but should not. For example, there is always a want for new equipment, such as the FUS suggested ladder truck, but the truth is that the District already has far more equipment than the FUS can credit for, and thus the new truck would provide no point gains in the FUS evaluation, not to mention a huge labour cost. It also became obvious that previous Boards had picked ALL of the low hanging fruit on the recommendations list, and that any attempts at improvement were going to be expensive.

Water supply is not something that a fire district would normally supply, but dry hydrants are the exception, and particularly so in a district that is not entirely supplied by pressured hydrants. I encourage placement of as many dry hydrants as possible throughout the entire district, and even on the entire island, as wildfires respect no political boundaries.

The need for dry hydrants within the NSSWD served area is less obvious, and that is what I am addressing this letter to.

The FUS report recommends I believe, a 3400gpm fire flow. This required DEMAND number is mostly determined by a few larger buildings in the downtown area. The current SUPPLY from NSSWD is in the range of 1633igpm as shown in the Water Flow Test Report for the one official test at the Arts Spring Centre hydrant. So NSSWD supply is basically 50% of FUS system demand at this location. If you do the building code calcs for the Artspring Centre itself, as I have done, not allowing for other structures, or sprinklers that are not to current code, it comes to about 60%, so probably the same 50% with other structures considered. Thus the Building Code and FUS are in agreement. I note that unofficially some hydrants barely flow at all, and others fall between these results. So basically the NSSWD system as currently set up, can supply 50% of required demand flow AT BEST, and in many places a lot less! There is potential for improvement in the system but that is not under control of the fire district, and my conclusion is that there is little chance of getting the NSSWD to make significant changes.

On top of that there is the issue of reliability of the NSSWD system, and the 2015 FUS Report is very clear that the system is NOT RELIABLE. And since no testing may be done, it is a certainty that we will find out about the system's weak point during its peak demand, a fire of course, when the system completely fails. I don't think you are going to get permission to test, let alone to failure, but good luck!

There is however the Superior Shuttle System owned by the fire district. The shuttle system is formally tested to 200 gpm, and after studying their methodology, I accept that under the former rules they could have done a lot better, maybe double that. But even so, the 400 added to the 1633 at Art Spring totalling 1833gpm still only equals 54% of required fire flow AT BEST. And here I need to point out something very important. The testing system used for these Ganges FUS approved Shuttle tests used the NSSWD system as the source for the tests. Thus, if the NSSWD system fails, as it surely will, you will lose both systems! Or to be more exact, the Shuttle system will need to source from somewhere else, currently St Mary's lake, and their productivity to serve a downtown fire will be reduced dramatically. The fire dept would be left with probably only about 100 gpm in total, and not able to achieve much of anything after their initially full tanks become empty. So I hope I have established the NEED. What can be done?

The solution to this problem is in my opinion a choice between 2 options:

1) a water tank in or near downtown, connected to NSSWD for supply, but with a check valve to prevent backflow into the damaged system. This would serve as a separate supply to the shuttles while it lasts.

Or

2) a salt water system that takes sea water and provides the flow either direct to the fire thru (dry) hydrants or indirect thru the shuttle system.

If direct, and this is where the Harbourwalk idea comes in, there is every reason to believe that, added to the currently supplied NSSWD system you might achieve the full required amount and be able to safely put out the fire. The captain on site might then have enough confidence to commit to a Full Service entry to save lives, whereas otherwise I suspect he shouldn't. Perhaps the NSSWD system would not be taxed to failure, if the salt water system was functional.

If indirect, at least they should be able to provide 400 gpm which should serve to prevent fire from spreading to other buildings, something the 100gpm from St Marys Lake would be doubtful to achieve.

Looking at the above 2 options, the clearly preferred is the Harbourwalk, as it provides a real chance for direct service to the fire at numerous locations in the downtown. Of course costs are also a consideration, but it is not obvious to me that, considering that others are paying for the Harbourwalk structure (?), the tank storage would be cheaper. In fact I suspect the Harbourwalk solution is cheaper. It might be worth your while to have both systems costed. If Harbourwalk is cheaper then that is the way to go. You might even consider contributing the difference toward the Harbourwalk structure. You would have a much better system for the same cost.

I know that, at my urging, the fire department has already shown that a seawater source is entirely doable. So much so that they have established a methodology to achieve at least a minimal capability. It is now time to step up to a capability that will be really meaningful, and Harbourwalk looks like a very serendipitous solution. I fully support the idea.

Reg Jefferd.

