

Oct. 14, 2016

Subject: **Correcting the record on water infrastructure**

To: Mr. Jon R. Runge and whom it may concern:

This letter is in response to the Washington Examiner article on 10/14/2016 with the subject title. This letter is filled in half truths. I will not attempt here to correct them all. However, Mr. Runge quoted a study I did and I feel compelled to set the record straight on those items.

Mr. Runge correctly states that "46.4 percent of the reported breaks occurred in PVC pipe that had been in service for 21-40 years. Moreover, 51.5% of the reported breaks occurred in PVC pipe that had been in service for 20 years or less." As stated in my publication, these early failures are often caused by improper installation. In every investigation I have been involved with dealing with early failures of PVC pipe, improper installation was the cause in every situation. Yes, PVC does require proper installation to achieve a long life. As stated in my article, "The city of Calgary has been able to achieve remarkably small PVC failure rates due to enforced construction standards (Brander, 2004). In addition, Calgary requires new subdivision infrastructure to remain the property of the private developer for a period of two years." Calgary no longer installs DI pipe because of their highly corrosive soils. PVC does not corrode and thus provides a longer life than DI pipe. Most importantly, Mr. Runge fails to mention that the same article showed that failure rates of DI pipe are almost twice as high as PVC pipe. Figure 20 of my paper shows that PVC break rates decrease over time. There is evidence that DI pipe break rates increase over time.

We now have PVC pipe in use for over 50 years and dig-up studies of that pipe shows it to meet quality control tests of new pipe. This was the subject of a paper I wrote two years ago for the 2014 Plastic Pipes Conference in Chicago, Illinois. The paper titled "Validation of the Long Life of PVC Pipes" documents testing done at Utah State University and also reviews papers from **15 other authors** from around the world. They all conclude that a properly design and installed PVC pipe will have an expected life in excess of 100 years.

New DI pipe designs include corrosion inhibitors such as encasement in polyethylene and installation of sacrificial anodes. For these improvements to work, a very careful installation is required. In fact, all pipe should be carefully installed and properly inspected to ensure it performs as designed. The purported advantages Mr. Runge makes for DI pipe are the result of cherry picking a few facts, but avoiding telling the whole story.



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