

*Questions I would ask if I were a SDW Commissioner are in italics.*

SWRO - Stonebridge Village (now owned by Missouri – American) MO5031086: Developer constructed a ground storage tank instead of an elevated tank, changed the locations of Pressure Reducing Valves (PRVs) and bypassed a PRV with an unapproved extension. This resulted in pressures in excess of 210 PSI on water mains designed for no more than 160 PSI. The other result was 8 PSI pressure at the base of the ground storage tank with a significant deficiency whose cost is being borne by subsequent system's owner after initial developer went bankrupt. *Which Design Guide applied to this situation and does it set limits on maximum pressures? How come DNR didn't catch this before or during the final inspection? Were there safe water or disruption of service issues? (Remember, I'm just being a negative commissioner.)*

SWRO – Kinchlow Shores Condominiums MO5301557, Review #54216-07: Design Guide article 7.4.8. requires certification of hydropneumatic tank – A non-standard 14-foot diameter by 8-foot long 5,000-gallon hydropneumatic tank was installed. It was not fabricated to ASME Boiler and Pressure Vessel Code. It was un-stamped and had nearly flat plate heads welded to the cylinder instead of dished heads. At startup the heads blew off and the tank failed. The engineer had specified it correctly to start with and the plans/specs reflected a code vessel. It is assumed that the contractor low-balled the price and the developer approved it. Since then, bladder tanks were inserted after the debris was hauled off.

*Which design guide applies to this system, 1988 or 2003? Where were DNR's inspectors when this was happening? It doesn't sound like there were water quality issues. The developer got what he deserved.*

SWRO – Miramar Condominiums MO5301501, Review #53898-06: Design Guide articles 2.4.a. Siting requirements that a site in general shall not be subject to risk from pollution & 7.0.3. storage tank location at least 50 feet from sources of contamination. – This system has 2 ground storage tanks of several thousand gallons each. The original approved plans and specs showed all the water system components, including the tanks approximately 600 feet from the wastewater treatment facility servicing the same development. The developer decided to move the storage tanks to within 50 feet of the activated sludge wastewater treatment plant which most people can readily see emits aerosols and presents an unnecessary risk.

*This sounds good. We need to know which design guide applies to this system, 1988 or 2003, so the correct requirement is cited. We could have taken enforcement action against the developer for modifying the water system without a construction authorization.*

SLRO – Jefferson County Water Authority MO6071352: New technology and redundancy requirements – Described in detail through email

?

SLRO – Cardinal Meadows MO6031215: Cardinal Meadows Subdivision was a new subdivision in Franklin County, activated in 2001. Before the developer could turn the water system over to the homeowners the St. Louis Regional Office received some questions from residents about adequate pressure in the subdivision. This was an issue for the homes along the east side of Cardinal Meadows Drive, the road at the higher elevation near the well and storage tank. Upon review of the plans submitted and approved I noticed the review engineer had required the storage tank be raised so that at least 20-psi could be maintained (photo 1).

The reviewing engineer (contract engineer) approved only 20 PSI normal design pressure and stated that he could not require higher pressure based on the design guide, only the regulatory minimum of 20-psi.

SLRO negotiated with the owner/developer and he agreed to install two high service pumps to maintain at least 30-psi pressure in the subdivision. When notified the high service pumps were installed I went to the subdivision to do a final inspection. However when I entered the well house I found only one high service pump had been installed. The engineering firm was represented at the inspection. The engineer stated that he was not pleased with what the owner/developer had installed and agreed to bring the installation up to the design that had been approved. After the proper installation of both high service pumps the Homeowners Association agreed to accept transfer of the ~~operating~~ permit to dispense water. (*do we transfer permits? I thought they had to be re-issued to the new COA*)

*This sounds like an example of why the design guide doesn't need to be in regulation. The discussion/persuasion process worked.*

NERO – Livingston #4 MO2024352: Design and construction on 20 PSI (USDA) – Repeated design and construction was required to compensate for under-designed distribution system and provide safe and reliable drinking water to customers. Described in detail through email  
?

NERO – Livingston #3 MO2024354: Design and construction on 20 PSI (USDA) – Repeated design and construction was required to compensate for under-designed distribution system and high maintenance costs were necessary due to persistent main breaks. Described in detail through email  
?

NERO – Linn – Livingston #3 MO2024350: The water district had to build a second solids contact unit so that they could continue plant operation while replacing the metal interior working of the existing solids contact unit (redundancy). The transmission main to the Eversonville Standpipe was also undersized when the plant was first built. The high service pumps could not deliver 250 gpm plant capacity to the Eversonville standpipe. During high usage periods the plant had difficulty keeping the standpipe full. The situation got progressively

worse until the district constructed an elevated water tank with a new larger transmission main that will carry the designed plant flow.

*Again, I as a commissioner would want to know who approved the undersized transmission main, the standpipe, the pump and how this relates to design standards being in/not in regulation? (A possible response would be this situation wouldn't happen in the future if design requirements were clearly specified in regulation.)*

KCRO – Harrison #2 MO1024242: In 2011 KCRO received a letter of complaint (submitted to the Governor's office), from Mary Briggs of Harrison County, The Briggs property is along Hwy. O in Harrison County.

According to the district's clerk the Briggs property is on a 2-inch water line, and the water district is serving the maximum number of customers they can and maintain adequate water pressure. This would be part of the district covered by the 2005 and 2007 moratoriums on new connections. There are approximately 236 other potential customers that cannot connect due to low pressure and flow issues.

When the economic stimulus package came out the district developed plans for replacing that water line with larger lines. They hired an engineering firm to draw up plans and submit these for approval and funding. But were later told they would not get a 90% grant, the amount had dropped to 40% and the district would have to provide the rest through bonds and loans. The district was not able to fund 60% of the cost of the project on their own, and this left the district with a bill for the engineering services, but no new lines.

Plans for creating Harrison Co PWSD #2 were submitted in 1987. The final inspection of the newly constructed system was conducted in May 1989. The initial (projected) population was 626. Of the initial construction of the distribution system, in addition to all of the 8-inch, 6-inch, 4-inch and 3-inch pipe installed 331,000 L.F. of 2-inch pipe was installed.

The water system has been in service now for 24 years (1987-2011) and there are ten years remaining (as of December 1, 2012) on the original 1989 loans and bonds. There have been approximately eighteen expansion/improvement construction projects since 1987.

According to the January 2010 engineering report by Shafer, Kline & Warren there are 236 potential customers waiting for service, but cannot connect due to flow and pressure deficiencies in the system. The report stated there are currently 174 miles of water lines which are insufficient due to flow and pressure deficiencies, and the water district cannot add new customers. The district began limiting new connections in 2005 for some portions of the district, and in 2007 a district wide new connection moratorium was imposed by the Department.

The total (planned) construction cost of the distribution system, including valves, meters, stream-crossings and highway crossings was: \$2,778, 277.00.

The cost of using 3-inch pipe instead of the 2-inch pipe as the minimum size would have added \$44,221.60 to the total project, which would only be a 1.592% increase.

In 1993 Harrison Co PWSD #2 submitted plans for a expansion and improvement project, which included 1,563,500 lineal feet (296-miles) of pipe, of which 1,039,250-ft (196.7-miles) was to

be 2-inch. This project was eventually greatly reduced and not constructed as originally submitted.\* Actual footage of pipe and costs were not in the file.

The estimated cost of the construction portion of the project was estimated at \$3,254,825.00. Using these figures the substitution of 3-inch pipes and valves for the 2-inch pipes and valves would have increased the cost by \$224,580; which is a 6.9% increase.

*\*Were the changes approved by DNR?*

*Was the system's design adequate for the initial projected population of 626?*

*The system has outgrown its original design capacity but is this a design standards guide/rule problem. If the design guide in effect in 1987 had been in regulation, would that have avoided the problem? (I think an approach would be to say 3-inch pipes are better and we need a rule in order to ensure their use. It's better for everyone because it's more cost effective than replacing the 2-inch pipes later and allows more customers to be connected.)*