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July 23, 2010

Richard and Dorothy Miller  
Anderson RWD 1  
23723 NW Mitchell Rd.  
Garnett, Kansas 66032

Re: Operator-In-Training (OIT) Visit

Dear Richard and Dorothy,

I enjoyed meeting with both of you on July 13. I know we discussed a lot of issues during our visit and hopefully I can summarize most of them here. If not, let me know. Our discussion was basically a review of routine operation responsibilities and requirements such as: 1) measuring and recording chlorine residuals daily; 2) collecting and submitting twice-monthly bacteriological water samples to the KDHE lab; 3) preparing and using a bacteriological sampling plan when collecting samples; 4) following a line flushing program especially when the city of Garnett conducts a free chlorine burnout; and 5) requirements that must be met in order to qualify to take the Small Systems certification examination.

**Daily Chlorine Residual Monitoring:** All public water supplies are required to measure chlorine residuals in the distribution system on a daily basis. The results of the test along with the date, time, and location must be maintained in a manner to assure compliance with the Kansas Department of Health and Environment (KDHE) minimum requirements. These records normally do not need to be submitted to the KDHE but will be reviewed by the agency's field staff during their routine sanitary surveys. KDHE regulations require a minimum combined (total) chlorine residual of 1.0 mg/L be maintained throughout and at the far ends of your system. When water supplied by Garnett has a free residual, a minimum 0.2 mg/L residual must be maintained. It was great to see that you already had a satisfactory chlorine residual test kit and were monitoring residuals daily at various locations.

**Collection of Bacteriological Water Samples:** All public water supplies are required to monitor for coliform bacteria on a monthly basis. The number of samples required is based on population served. Make sure all samples are submitted each month; otherwise a monitoring violation will occur. Most months the district will only have two samples to collect. However should you have a sample that tests positive for coliform, the KDHE lab will send three repeat (check) samples. Those must be collected at the original positive location, and then both upstream and downstream of the original site. Samples can only be collected on Monday, Tuesday or Wednesday each week. Also try to avoid sampling on or near holidays. Samples should be collected indoors from customers that use a normal amount of water. Avoid collecting samples at locations that have water softeners, filters or other point-of-use treatment devices. Samples must reach the KDHE lab within 30 hours. If the sample is too long in transit, a replacement bottle will be shipped to the district. The sample submission card enclosed with the bottle should be completed making sure to include the time and date of collection. Please refer to the handout I left for more tips on how to properly collect bacteriological water samples.

**Developing a Bacteriological Sampling Plan.** A sampling plan is required to ensure all parts of the distribution system are monitored. The district's plan should include a map of the distribution system divided in half (Zones 1 and 2) with approximately equal number of customer meters in each zone. A minimum five (5) sampling locations should be listed within each zone. The address, meter number or homeowner's name at each sampling location should be listed with the map. Again, you should not use locations that have water softeners or other point-of use treatment devices. The sampling plan should then be used each time the collector picks a location to collect water samples. KDHE recommends alternating between zones each time a sample is collected, while rotating through the five sampling locations within each zone. A new sampling plan should be developed every January. A handout was left that should be helpful in developing the district's sampling plan.

**Flushing of the Distribution System:** It is important that the distribution system mains be flushed on a routine basis if needed. Many systems flush twice per year; however, the frequency of flushing can vary from system to system. Line flushing is good policy to help keep lines clean and introduce fresh chlorinated water into areas that may have low chlorine residuals from time to time. The district should also thoroughly flush the distribution system whenever Garnett switches to free chlorine. The district could have a nitrifying bacteria biofilm throughout parts of your distribution system. Such a biofilm can develop when ammonia is added to water to produce combined chlorine and prevent byproduct formation. The ammonia unfortunately is also a food source for nitrifying bacteria. They can create a chlorine demand that depletes the residual in your water. Consequently, I suggest you conduct a "free-chlorine burnout " by thoroughly flushing your system.

**Operator Certification:** The level of certification required for Anderson RWD 1 is a Small Systems (SS) certification and the experience requirement is six months. Richard will have his six months of on-the-job training in January 2011. To assist you with the operation of your water system and prepare to take the certification examination, I suggest studying the *Kansas Small Water Systems Training Manual* sent to you by KDHE. You might also check both the KDHE and KRWA websites for additional training materials, study guides and practice tests. Finally, we encourage you to take advantage of the various training opportunities held across the state. Please refer to the 2010 KDHE Operator News brochure for a listing of future workshops and exam dates/locations. If you have other questions regarding certification, I suggest contacting Teresa Schuyler with KDHE's Bureau of Water. She can be reached by phone at 785-296-5511 or by email at [tschuyle@kdheks.gov](mailto:tschuyle@kdheks.gov).

You should have received, as requested, the sampling locations that should be used to collect water samples under the Lead and Copper Rule. Operators usually ask homeowners to collect those samples, as they must be first-draw samples. Hopefully you have also been contacted recently by Jesse Knight to discuss KRWA mapping services and locating your existing district boundaries. Greg Duryea will also be calling to help with your MS Excel billing spreadsheet. I will also be available to continue meeting with you monthly to help prepare Richard to take the certification exam. Please feel free to call me at 913-850-8822 if you have any other questions. My email address is [jeff@krwa.net](mailto:jeff@krwa.net). Funding for the above assistance was provided through a contractual arrangement between the Kansas Department of Health and Environment (State Revolving Loan Program set-aside) and the Kansas Rural Water Association (KRWA).

Sincerely,

Jeff Lamfers  
Consultant, KRWA

c: Teresa Schuyler, KDHE, Topeka  
Richard Thomas, KDHE, Chanute