

Use of GPS and GIS Continues to Expand for Smaller Water and Wastewater Systems in Kansas

The days when it seemed adequate to keep information in hardcopy records have been clicking past. Much of that is due to access to changes in technology and expectations of anyone who is needing to locate underground infrastructure. Today, Geographic Information System (GIS) technology has added an entirely new level of functionality – and opened the world up to a wealth of information.

KRWA has provided a GPS mapping service for nearly two decades. What began as a demonstration project supported mainly by the Kansas Corporation Commission today has grown to see nearly 400 projects completed for water, wastewater and gas systems.

KRWA continues to stay busy with GIS mapping projects. This article showcases projects that are underway this Spring.

The cities of Linn, Bucklin, Wakefield, Grainfield, and Lyon RWD 5 have decided to bring their utility mapping into the digital era this year. As usual, numerous other systems want their maps or GIS updated and have requested that I stop by and collect newly installed features and newly discovered infrastructure locations. Every system mentioned above is tired of the inaccuracies and or limitations of their current paper maps. Also, these systems all have relatively new operators who realize that in today's world, they can and should do something about this to improve the current and future day-to-day operations so that future operators do not inherit the same inadequate maps.

The data collection process for the City of Linn was completed in early April. This small community of 382 people in northeast Kansas has a water system that is only 20 years old after being replaced in 2003 with funding through the Community Development Block Grant Program. Superintendent Todd Lindquist has been on the job for less than a year. The city has a good set of water system plans from the replacement project, making the situation more manageable than many small municipal systems with 100+-year-old systems. Some may think a small system such as Linn with a new water system probably shouldn't need to invest in upgrading maps, but even in just 20 years, valves can easily get hidden with street paving, silt, or vegetation covering them up. For a new operator such as Todd, the

black and white as-built plans accurately show valves at intersections, but it's difficult to determine if they are in the street or up in the grass. Using digital mapping data in a free Google Earth mobile app, which is typically what KRWA provides, makes locating so much easier, which is what Todd is looking forward to.

Next on the data collection schedule this Spring was the city of Wakefield. Situated on the northwest end of Milford Lake in northeast Kansas, Wakefield has a population of 846. A portion of the city was actually relocated to higher ground due to the creation of Milford Lake in the 1960s. I have only collected the water meters as of June 15, as Superintendent Kyle Murphy is locating and marking the valves throughout town to reduce the time KRWA needs to spend there. Wakefield's current water system map consists of one (1) map. It is completely hand drawn on a vinyl sheet, with valve locations that aren't correct at all. You could say something is better than nothing, but it is rather unimaginable to believe that a city this size would only be left with that for a map. At some point in time, the original



This is the only map of the water system that the operators in the city of Wakefield have ever known. It is completely hand drawn on a vinyl sheet; most valve locations are inaccurate.



The drawing is from the city of Wakefield's mapbook. This mapbook was created over the last few years while locating all the valves in town for valve exercising. Measurements are penciled in to make locating easier in the future. This was very useful for City Superintendent Kyle Murphy in re-locating the valves to make the GPS data collection go more efficiently.

system maps had to have been lost with the town relocation or due to some other cause. The previous Superintendent, Jeff Ochs, took action in the last few years, though, due to the mandatory valve exercising program. He located all of the valves and took things a step further, and created a mapbook of all the valve locations with measurements to find them. This will significantly benefit Kyle in locating the valves before my arrival to collect them, as Kyle has also been on the job less than a year and many of the valves have become challenging to locate again. I commend Jeff and Kyle for putting in the work to improve their situation in regard to their water system maps.

Between the projects mentioned above, Franklin RWD 4, Osage RWD 6, PWWSO 12, Washington RWD 2, and the City of Highland have all had updated data collected to keep their maps or GIS current. More and more systems are recognizing the benefits of a GIS instead of relying on an operator's memory or an old inaccurate map. I've also been working with more systems that want to or have purchased their own GPS receivers, and a few

Having better maps by itself is excellent for any utility, but having the mapping data in a digital format can provide so many more benefits outside of being able just to find system infrastructure.


are pairing that with mapping software with editing capabilities. For most small systems, a modest and free setup of Google Earth accomplishes everything they need, with KRWA doing all of the collecting and data editing. For those larger systems that are financially able with technologically sound staff, taking all of GIS Mapping on in-house could be the answer. Another option is just collecting your data and having KRWA do the editing. KRWA is here to assist the system, whatever their needs may be with GIS Mapping.

Having better maps by itself is excellent for any utility, but having the mapping data in a digital format can provide so many more benefits outside of being able just to find system infrastructure. When Kansas One Call, Fire Protection Insurance Specialists, FEMA, or engineering firms need the data for different studies, it's as simple as an email to provide the information. I credit the systems mentioned above for making a change that will make their jobs and future employees' jobs easier and more efficient for many years.

If any city or RWD is interested in learning the benefits of GIS Mapping, I encourage you to give KRWA a call at 785-336-3760 or email me at mark@krwa.net. This technology continues to change and there are new methods that can be of benefit to water and wastewater utilities.

Mark Thomas has been a GIS Mapping Tech since September 2006. Mark has a bachelor's degree in geography from Kansas State University and has specialized studies in ESRI's ArcView and ArcPad software.





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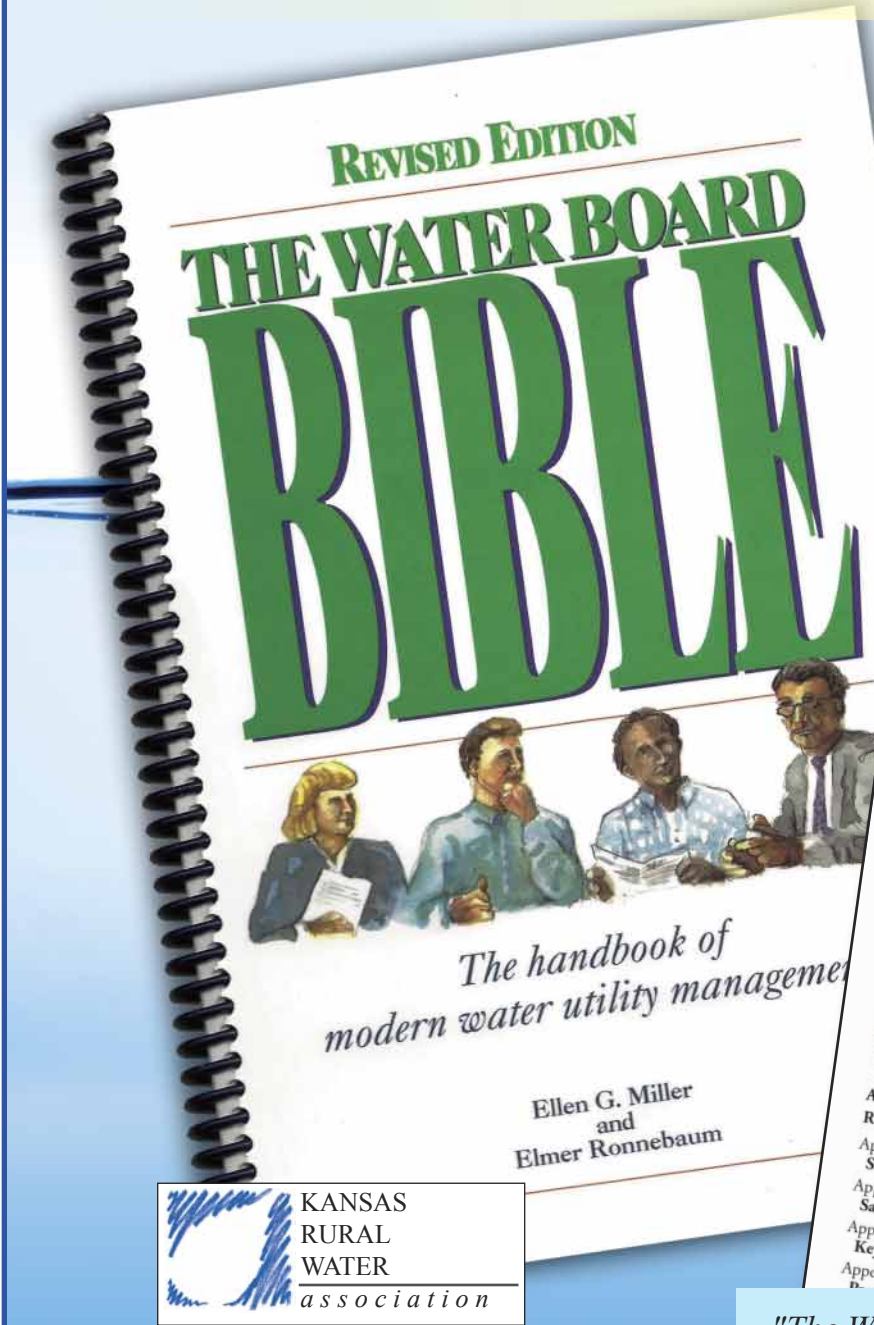
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A newly updated *Water Board Bible*
is now available from Kansas Rural Water Association



Building on the strong foundation document authored in 1993 by Ellen Miller and Elmer Ronnebaum, the "Bible", was reprinted in 1995 and again in 2010 with minor revisions.

A much more extensive review and updates in the 2016 printing were provided by Gary Hanson, Stumbo Hanson, LLP (ret.).



THE WATER BOARD BIBLE

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– Gary Hanson

KRWA also continues to make its handbooks available to other state and national organizations. More than 49,000 copies have been provided.

To obtain copies, contact KRWA, 785.336.3760.

Funding for the 2016 printing is courtesy of the Kansas Rural Water Finance Authority. The Authority has offered to donate copies to every rural water district in Kansas, upon such request. The handbook will also be used for board training provided by KRWA.