

Jefferson County proposes online GPS map hosting and sharing

Numerous cities and rural water districts have contacted KRWA to conduct GPS data collection and GIS mapping for them. But until now, KRWA hasn't collected data for an entity larger than a city of 6,000 people. While several thousand customers may seem like a lot of meters, geographically they can comprise a fairly small area. Also, the data is only used by certain personnel within that entity. No one else has access to the data, knows of its existence or would have any use for it. Jefferson County, located northeast of Topeka, has embarked on a unique venture. County GIS Coordinator Dr. Chris Schmeissner and Cartographer Kristen Jordan have developed a

system to utilize existing data, new GPS data and local infrastructure knowledge to host maps and information online for utilities in the county. Not only will each city's or RWD's staff be able to access and view their maps, they

will also be able to edit features and update customer information. Not long ago, this was impossible without a city or RWD purchasing expensive mapping software and investing a great deal of time into learning how to use it. Now, with server based ESRI ArcSDE software, and only one person having the knowledge of how to use it, an entire county's

infrastructure, parcel information, road information, addresses, sections and any other digital data including aerial photography can

RWDs in Jefferson County. The county agreed to pay all travel and consumable costs associated with the countywide data collection

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be hosted and shared. To KRWA, this approach may well be the most practical option for many communities.

KRWA was contacted by Kristen Jordan regarding KRWA's capacity to collect data and calculate expected costs. KRWA in turn provided estimates for data collection for each city and some

project. The proposal for the online idea was presented to representatives of the cities at a meeting in Oskaloosa on August 28. The collection process, the online service, security, accessibility and costs were all explained to the participants for them to discuss with city officials. Many questions were asked and answered. The



*Pete Koenig
GPS Mapping Coordinator*



Kansas Rural Water Association uses Trimble GeoXH™ handheld GPS data collectors for GPS mapping. The GeoXH is billed as Trimble's top-of-the-line solution for high accuracy GIS data collection. The handheld delivers the subfoot (30 cm) GPS accuracy required by water and wastewater services, electric and gas utilities and other applications where accurate positioning is crucial.

sentiment from Dr. Schmeissner was clear. He said, "This will never be available at a more reasonable cost and benefit to county communities."

The project will be conducted in several stages beginning with data collection. KRWA staff will visit each community and with the assistance of city or RWD personnel, collect GPS data for all infrastructure features including water meters, valves, hydrants, wells, pumps, chlorination stations, manholes, lagoons and lift stations. The GPS data will be brought back into the KRWA office for post-processing. Post-processing involves other software scanning the collected data to increase the accuracy of the GPS positions due to possible variance cause by atmospheric or other uncontrollable influences. The processed data will then be sent to the Jefferson County GIS Department where "the dots will be connected." Chris and Kristen will utilize existing system maps, notes and operator knowledge to interpret the locations of water and wastewater lines. The data will be layered onto high resolution countywide aerial photography and posted on-line for entities to view. Attribute information such as addresses, parcel ownership, meter numbers, manhole depth and valve size will be joined to the data layers for each entity's staff to edit. If a new customer takes over an existing meter the city clerk or utility director can access the Web site and update the new owner information. Updating the on-line map will automatically update the central server, thus keeping all records current. If new features are added to the system, the utility has different options to reflect those changes. KRWA can schedule a time to collect GPS data for the new infrastructure or the utility staff can take measurements and submit those to the county. Kristen can then "plant" the new point in

Benefits of hosting by Kristen Jordan

The benefits of a county GIS department hosting infrastructure data would include the following:

First, the hosting provides an off-site backup in case data needs to be recovered. Computers crash, people lose things and disasters happen; data recovery should not be data re-creation. Having multiple copies of data in various locations increases the chance that the data will be available if something at the normal working location prevented the data from being accessed.

In our situation, this arrangement (hosting) makes the most sense. Instead of the cities having to learn GIS, the associated software and data management techniques, we can serve their data over the Web on a site that parallels Mapquest or GoogleEarth. By having their data stored in our facility, they are able to simplify their learning curve while still experiencing the advantages of working with geographic data.

Jefferson County already has a secure data storage system set up. If the cities hosted their own data, they would have to set up their own ArcSDE system if they wanted the assurance of having the most secure data storage option available. Otherwise, they would be working from the dubiously secure method of shapefiles and personal geodatabases.

Having the county host data enhances the capabilities for data sharing. We incorporate the information into the GIS systems of county departments who need to view the data, like Dispatch or Emergency Management. Instead of requesting a physical copy of the data from the city, only a simple phone call asking permission to use the data needs to happen. It is also easier for us to share the data with engineering firms working for the cities since transferring geographic data has a few tricks that each individual city would need to learn.

The Jefferson County GIS Department will have increased peace of mind. We know that their data is in a location that is secure and regularly backed-up. We know that if a disaster happens, our Emergency Management Agency will know exactly where the water infrastructure is because we have the data. We know the city clerks and utility workers can focus on the information they need, like viewing the location of a water meter, instead of worrying about details like geographic projections, spatial references, database format and geoprocessing in ArcToolBox.



Jefferson County Cartographer
Kristen Jordan

the digital file. If the feature is visible on the aerial photograph, a point can be placed directly above or beside that feature and any lines can be drawn.

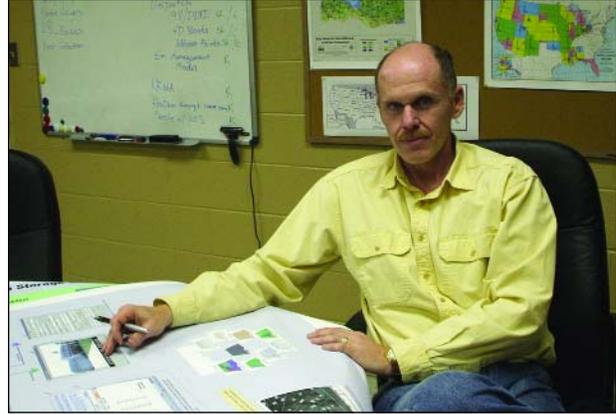
KRWA has become very efficient at collecting GPS data – including collecting GPS positions, entering attribute information and troubleshooting the Trimble GeoXH units that KRWA presently uses. Jefferson County proposes to take advantage

of KRWA's extensive knowledge of data collection procedures and post-processing abilities. The county staff is coupling that with their knowledge of GIS software and access to existing information to create a system of functionality and data backup that will benefit the cities and RWDs in Jefferson County for years to come. It should be a good partnership.

From a County Department point-of-view, hosting data in one



Left: KRWA GIS/GPS Mapping Coordinator Pete Koenig looks up from working on system processing work sent to the Seneca office from a KRWA crew in the field.



Right: Jefferson County GIS Coordinator Dr. Chris Schmeissner takes a break from his work in his Oskaloosa, Kan. office.

location makes sense and is more efficient than having to “seek out” the data that is needed. Instead of an emergency management director calling cities A, B, C, D, E and F to get storm shelter location data and have to deal with six different people’s schedules, he can make one call for permission and download the data to incorporate into his own GIS or

simply access the information online to answer his questions. This could save time in the event of an emergency if rescue personnel need to know where to start looking for survivors after a disaster.

Security has always been a concern. By hosting the data and sharing it with ArcSDE software on a secure server, a password

protection protocol can be set up to monitor who logs in and what they download or edit. This “safety net” can deter and catch would-be hackers who otherwise could have accessed the data in the local clerk or appraiser’s office with the intent to jeopardize its integrity. By allowing one experienced department to oversee the security of the data, the integrity can be maintained and any modifications, either inadvertent or malicious can be quickly rectified. The Jefferson County GIS Department has never encountered a situation of data hacking, but it is better to be prepared and safeguarded.

The Jefferson County GIS Department will be demonstrating its countywide mapping project and on-line hosting at the upcoming Kansas Association of Counties’ conference in Wichita, November 18. They would like to have the entire system operational and accessible by the spring of 2008.

I encourage you to contact KRWA if you are interested in learning about efficient GPS data collection and mapping by calling KRWA at 785/336-3760 or e-mailing Pete Koenig at pete@krwa.net. Additional information will become available on the Jefferson County initiative as it develops further.

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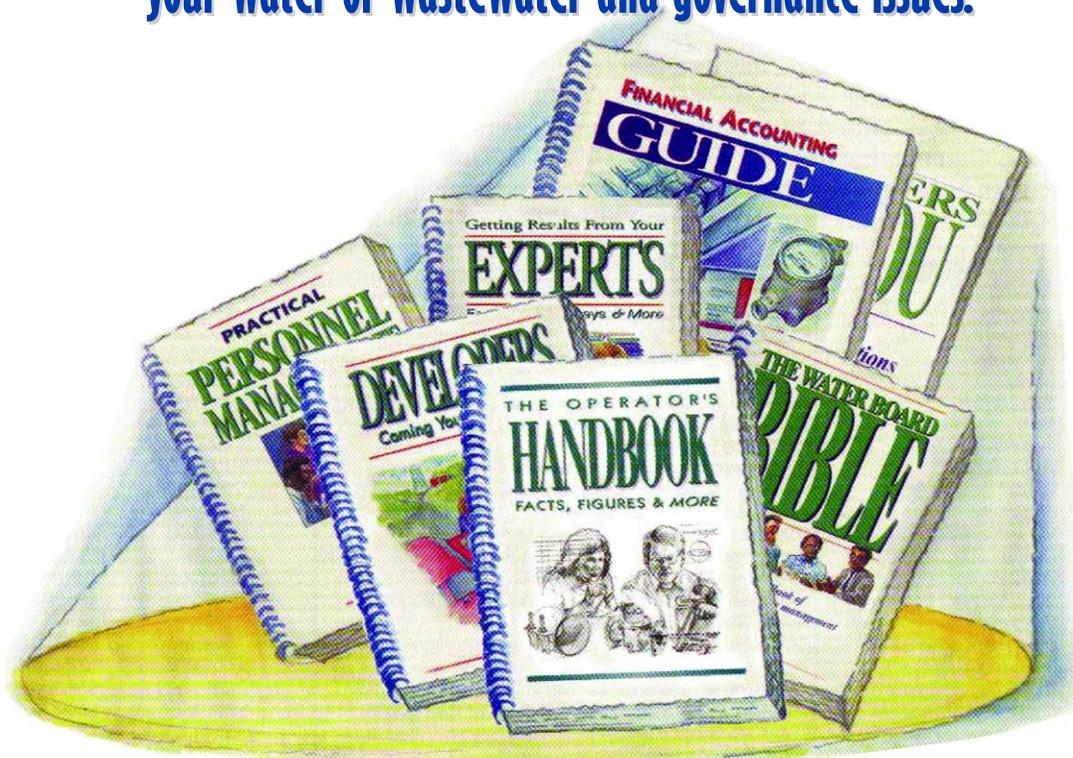
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