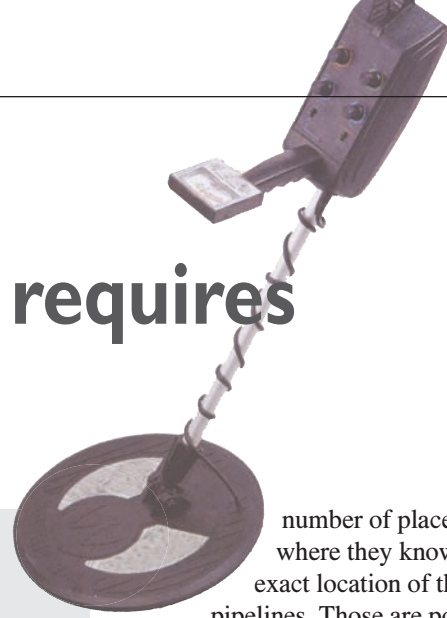


Efficient data collection requires systems to be prepared

KRWA Mapping has been keeping up with the vast amount of work it has in front of it. As efficient as we have become with the GPS data collection process, occasionally, there are some procedures that the utility can perform to make the process more efficient. It seems that the system personnel sometimes do not know what to expect prior to our arrival. This article will focus on what can be done to make the GPS data collection as efficient as possible and reduce the costs to the city or RWD.

First, any feature that an operator would like on the new maps should be included in the estimate that KRWA generates. For example, the number of meters, valves, hydrants, cleanouts, manholes, towers, pump stations, line points, or anything else that is desired on the maps needs to be included. It is pretty easy to be accurate when accounting for the number of meters and valves, but when trying to come up with the number of line points that the system would like collected, local utility workers really need to sit down and look over their existing maps and count the

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number of places where they know the exact location of the pipelines. Those are points that should be collected with GPS to help create a more accurate set of maps. If we generate an estimate with 50 line points, and then collect 550 points, the estimate will be substantially lower than the final bill because more time will be required on the project.

Costs for KRWA mapping are charged at an hourly rate. KRWA's present rate for travel time, data

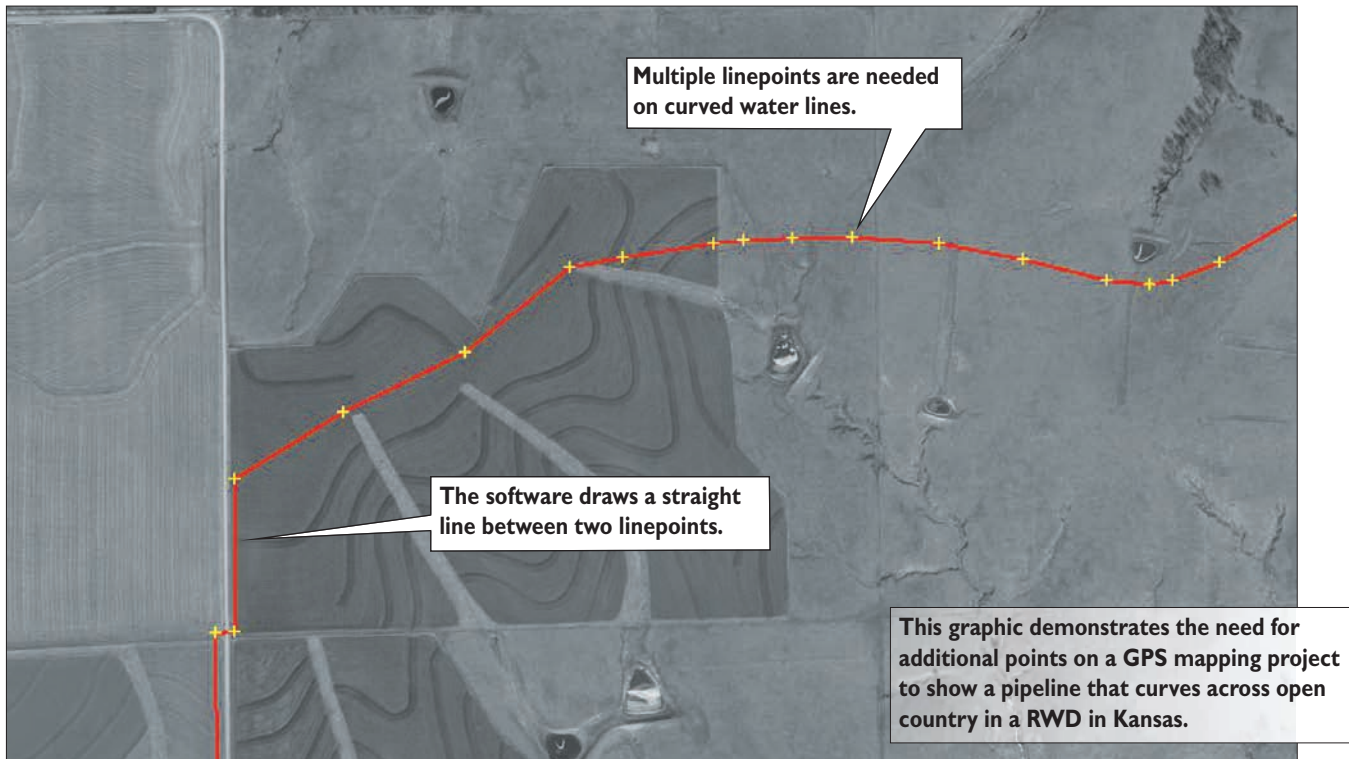
collection and map production is \$45 an hour. When we tell systems to be ready prior to our arrival, we are really putting the ball in the system's court. This means that the system needs to make sure all the points to be collected are quickly locatable. KRWA bases estimates at a collection rate of 15 points per hour, which is pretty conservative, but if we are spending additional time with a metal detector looking for valves or manholes on every other block or section corner, the estimate of 15 points per hour won't be met. Many times operators do not have a good metal detector that works well in finding valves and manholes that are buried. A good metal detector would be a wise investment for systems, not only for the purposes of getting ready for GPS data collection, but for having a great locating tool that will work well for years to come. Water line valves and manholes need to be accessible for proper maintenance.

Plan a route

Having a route planned out for the data collection project is also beneficial to the utility. Most of the time we like to collect data for the meters separately from the rest of the system features. We have found that by doing this we are collecting a large portion of the points quickly, via the meter reading route. We only have to spend 30 seconds over each feature, so most of the time we can collect the data on a meter in



Locating water line valves prior to starting a GPS mapping project is preferred to locating valves and collecting data at the same time.



about the same time it takes a meter reader to read it. Valves, hydrants, line points, etc., can be collected at the same time. If a rural water district covers a large geographic area and is sparsely populated with customers, it may be more efficient to collect all features (meters, valves and line points) at the same time. This will eliminate the need to go back over areas where data has already been collected for other features.

In rural water districts, more so than in cities, it is wise to collect as many line points as possible. More often than not, a city water line runs in a straight line from a valve at an intersection to a valve at the end of the block. Rural water districts are a unique in this respect. Many rural water lines have been installed without tracer wire. Many locations were also stored in the operator's head or on "as-built" maps, which frequently are not accurate. The fact is that some rural water lines are not going to be found until they are excavated. When such lines are located, we encourage system operators to keep good notes so these locations can be collected in the future. Other spots that are good candidates for line points are road and railroad crossings, creek crossings and where there is a directional change such as a corner. Systems that can locate their lines with locate wire are encouraged to mark the route with paint prior to our arrival. Doing so allows KRWA to simply follow the paint while collecting data. A line that has a lot of curves and bows is going to require more data collection than a line that

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runs straight. A straight water line just needs one point taken at each end; we can connect those two points on the computer resulting in a map that is as accurate as it can be. But, if the water line swings around a farm pond or other obstacle between those two points, more locations will need to be collected to accurately represent the route. The best accuracy possible is the goal.

Normally we have the system operator drive and KRWA staff does the data collection. We just can't take the system map and go do it by ourselves. GPS mapping is a joint effort between the system's staff and those collecting the data. GPS mapping is the best way to archive data that has, in many cases, been stored in the heads of operators and managers. If your city or RWD is interested to learn more about GPS mapping, I encourage you to contact KRWA at 785-336-3760. Also, check the KRWA Web site at www.krwa.net, then under "Technical Assistance" and then "Mapping". There is a host of information available concerning the process, listings of projects completed and those that are in progress.

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