By Mark Thomas, GIS Mapping Coordinator

Accurate Maps are Invaluable

The graphic above shows a rural waterline entering the road and running north and south along the west edge of the road. The red X represents a GPS point that was collected by KRWA, at the location where the township road crew hit the waterline while replacing a drainage tube. The location of the waterline was not known prior to the damage.

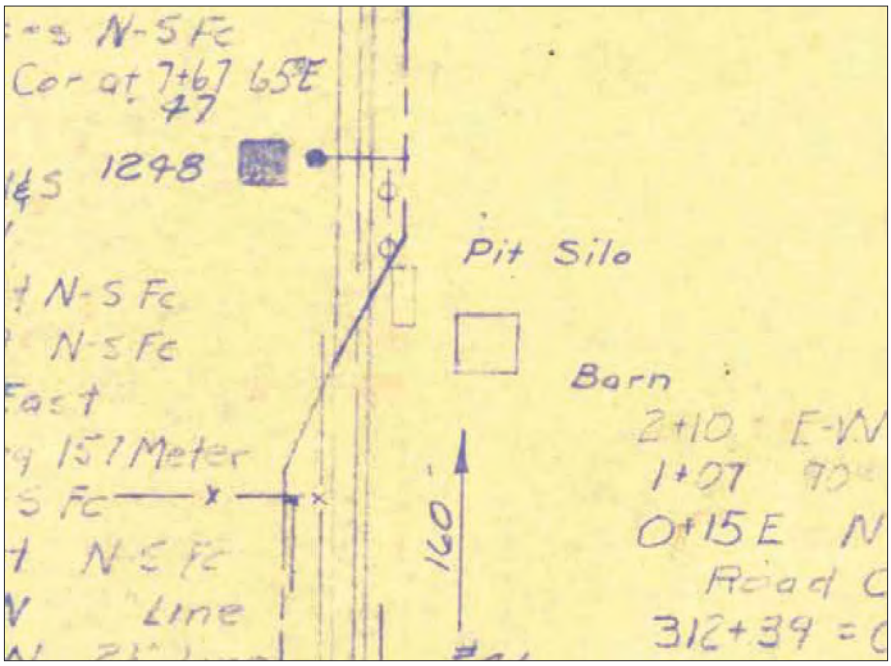
Upon request, I have attended many city council and rural water district board meetings to discuss GPS mapping technology. I've come to realize not everyone recognizes the value that knowledge and experience carry concerning locations of waterlines or other utility infrastructure. Frequently, the Kansas Rural Water Association (KRWA) is invited to board/council meetings to discuss GPS mapping when it becomes known that the current operator or superintendent is planning to retire. It's at that time when one or two board/council members or other staff might hit the panic button: "Nobody knows where most of the pipes are!" I suppose we should be thankful that some people actually do have an appreciation of what a new operator will be tasked with concerning utility locations when there are no accurate maps available. How to get the information that the present operator has stored mentally or on notes on old maps can also be a big challenge.

> **"Nobody knows where most of the pipes are!"**

New operators who are not fortunate enough to be in the situation mentioned above will be forced to learn about the system just as the previous person did – the hard way. That's not to say that the new operator will be coming into the job completely blind, as the system will (or should) have the original as-built plans to refer to. But on many projects that I've worked on, especially older RWDs that were built in the 1960s, the original plans have many incorrect areas on them. The old paper maps may show a pipeline crossing the road at the wrong location, a service line going to a meter on the wrong side of the driveway, or valves on the wrong corner of an intersection. Those as-builts were typically prepared in engineering offices from notes or drawings submitted at the time of the project completion – and usually by the project inspector(s). While there can be transpositions in the transferring of the data from field notes to final maps, not having accurate field notes should raise questions about the value of the inspection service too. What's past is past and it cannot be changed. The result however of what may seem to be small inaccuracies leads to bad locates today, which often results in broken pipelines. Sometimes previous operators may have sketched corrections on the old paper as-builts. For whatever reason, however, many operators did not do that. Still, it just seems irrational for two people to have to learn about the location of pipelines, valves, meters, etc. "the hard way".

Let's improve the maps!

I do not suggest that everything on a map that KRWA produces will be 100 percent accurate; there is no 100 percent accuracy in mapping of existing systems. The ultimate goal of a GPS mapping project of an existing system is to collect as many locations as possible concerning the water system components and pipelines, meters, valves, hydrants, storage tanks,



According to district's as-built map, the waterline crosses the road at an angle somewhere in the area. The creek is not even represented on the as-builts. Many small water systems (cities and RWDs) have not made any effort to update their mapping since the original project which in some cases was installed 40 or more years ago.

wells, etc. Many pipelines in older RWDs that go cross-country aren't locatable in most instances, but if there is any known point along that line such as a where a leak has been repaired, an evident fence crossing, or visible trench line, just collecting those points will be more information than is presently available to the operator or management. In such cases, KRWA simply does the best it can in drawing in pipeline to the best of the respective system's knowledge; KRWA also frequently reviews prior aerial photography. On some projects, we've been able to see the original trenchlines that were decades old.

As I've written in previous articles, GPS mapping is a process; it's not an event. In the years ahead, existing systems will reveal new information as to infrastructure locations. Some of the line locations will be where they were originally thought to be, and some will be on the opposite side of the road. Either way, with the technology that is available today to accurately collect this data, why revert back to the old way, do nothing and let the next guy try to figure it out?

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Water systems with an operator who has been has been on the job for many years should stop and consider the future. That operator's knowledge of the system should be valued, and put into a format such as a GIS where it is stored and readily available for anyone with the system to view. In my experience, new operators with these older RWDs and municipal operators can have a difficult time finding all of the features that should show on the surface such as meters and valves, let alone the features that are totally buried. Though there are costs associated with embarking on a project such as GIS/GPS mapping, there are also costs with involved with trying to manage and maintain assets without knowing the location of them. Think about the calamity that not being able to readily locate a mainline valve on a cold winter day when there's a main break that will otherwise drain the storage tank!

Funding assistance for GPS mapping

The Kansas Water Office continues to accept applications for a subsidy program to help water utilities pay for GPS mapping. The Water Office will fund 50 percent of the project costs up to a maximum grant of $4,000 to help pay the system to develop GPS mapping. From July 1, 2008 through October 8, 2015, water systems have received $506,020.23 in subsidies. Another $103,000 is committed to 29 additional projects. The work is not exclusive to any vendor, KRWA has completed more than 90 percent of the 155 completed projects.

If your system is in need of improving its map products, I hope you will give KRWA a call to discuss the benefits of GPS mapping. KRWA would be pleased to attend a board or council meeting to demonstrate the process and to show many examples of completed projects. Learn how to take utility mapping into the digital era. Give KRWA at call at 785-336-3760 or email me at mark@krwa.net for additional information.

Also, I hope that readers will plan to attend the Annual Conference and Exhibition for water and wastewater utilities next March 29 - 31 at the Century II Convention Center in Wichita. GPS Mapping will be one of the 60 presentations that will be made during that conference.

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