

Mapping Session at Symposium Highlights Accuracy Problems

by Walt Kelly

Solutions to the problem of inaccurate mapping of utility locations were explored at one session of the One-Call Symposium held April 28-May 1 in Anchorage. Accuracy is becoming an issue, because new mapping systems such as GPS (Global Positioning System) are showing us how inaccurate our older maps are. Discrepancies between the operator's, the notification center's and the excavator's maps now jump out at us. This is a problem for all Centers, all One-Call vendors and all mapping companies. It explains why facility operators comment: "Sometimes we get notified in that quarter and sometimes we don't."

The majority of notification center maps are based on the U.S. Census Bureau TIGER files, and while TIGER files are "relationally accurate," they are not necessarily "positionally accurate." This means that if the map shows road 'b' between roads 'a' and 'c', it will be. But you cannot be sure it is midway between them just because it appears that way on the map. Road 'b' may really be very close to 'a' or 'c'.

Errors are very likely to be introduced if a positionally accurate map is simply added as a layer in a One-Call Center's mapping system. For example: a facility operator using a positionally accurate map of its lines may see those lines appearing on the

wrong sides of roads or other unlikely places when that map is simply overlaid onto a One-Call Center's base map.

Until the base maps are upgraded sufficiently, this condition will continue to exist. The only workable solution in the meantime is for everyone to use the One-Call Center's base map. Facility owners should enter the locations of their facilities relative to the features on the One-Call map.

Even more important is the location of quarter section lines. When used as the basis for grids upon which notifications will be sent, the line locations must be defined only by the One-Call Center. There is so much variation among maps as to where these lines are. It is incumbent on the Center to get the best possible grid system and for everyone else to agree to use it—even when someone spots a section line location that is positionally inaccurate.

One of the mapping companies at the Symposium says their maps are positionally, as well as relationally accurate. However, in talking with them, there were some statements made which I would take with more than one grain of salt. Even if they had corrected deficiencies in all the TIGER parts of their maps, any added map layers from facility operators or other sources that were TIGER based would not properly match

the new base map until they, too, are updated.

At least two other mapping company executives have said they can't justify the expense of updating TIGER maps of areas where the market is too small to generate adequate sales of the maps. According to one mapping system user, the best maps presently available only cover the most highly populated areas of California where virtually every intersection's GPS coordinates have been recorded.

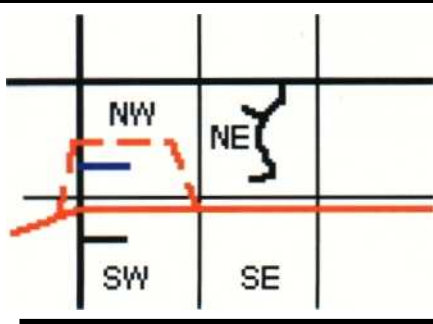
Updating TIGER maps, or any map, is mostly a manual process. Not everyone has the same level of information, skill and judgment. Users of even the best maps have found varying levels of accuracy from state to state, and even from one side of a city to the other. If two mappers update the same area, will their maps be identical? Probably not.

At the Symposium session, the One-Call Center operator who seemed to me to best understand mapping peculiarities freely admitted to the inaccuracies of the Center's TIGER-based maps. The Center's maps require constant updating by adding new streets or missing streets reported from the field, mostly by excavators. In addition, map updates are being made by emergency responders and parcel delivery services. But is anybody coordinating the activity? Probably not.

This Center operator expects positional accuracy of the TIGER to increase due to increased use of GPS. Then facility operators will be able to add their line locations as a layer with greater confidence. Until then, the better we understand the limitations of our present maps, and the better we communicate as we upgrade them, the better the notification system will work.

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a pipeline company that owns the line shown in solid red. The short black line in the SW quartersection is the actual location of Ranch Road as shown on both the pipeline and municipal maps. The blue short line in the NW quarter is where it is seen on the One-Call Center's base map, Street Atlas USA®, and other TIGER based maps. Although the pipeline is strictly in the SW quarter, the company would have to draw the jog into the NW quarter (broken red line) to be relationally accurate. Otherwise, an excavation site "north of Ranch Road" might not trigger a locate even though it could be right on top of the pipeline.

Here's what can happen when a pipeline's positionally accurate map is overlaid onto a One Call's base map that is not positionally accurate. This situation was uncovered by