Parcel Annotation Project

Randolph County Assessors Office

West Virginia GIS Technical Center
Final Report

Prepared August 2009 by:

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Project Summary:

        The West Virginia GIS Technical Center (WVGISTC) assisted the Randolph County Assessor's Office (RCAO) in creating published tax maps, in accordance with WV State Tax Map standards. The RCAO has an established digital cadastral database, but lacked the feature annotation layers necessary for a finished tax map. Creating the annotation data is a tedious and time consuming process which the RCAO staff was unable to accomplish while simultaneously meeting the requirements of their normal duties. The WVGISTC hired two full time graduate students to provide 975 work hours and expertise necessary to accomplish this project, in addition to the project manager. All project goals were completed during the three month performance period.

Project Accomplishments

        The WVGISTC accomplished its primary goal of providing RCAO with annotation features for their mapping database. The table below summarizes how more than 75,000 annotation features, on over 600 maps, were edited or created during the summer of 2009. The WVGISTC also sourced new reference data, such as streets and streams, and created a reference geodatabase for inclusion in RCAO's map products.

Map Type	Number of Maps	Land-hooks	Dimensions	Lot Numbers	Parcel IDs
1200 scale	132	1,181	22,356	8,405	12,469
2400 scale	3	60	369	207	565
4800 scale	533	7,961	969	1,341	19,992
Total:	668	9,202	23,694	9,953	33,026
Total Maps = 668				Features total =75,875	

Table 1: Project Statistics

Project Notes: These are notes from the project.

1. *Parcel Data Updates*
   a. The RCAO provided the WVGISTC with parcel data from April 2009 from which to create annotation features. However, RCAO continued to edit the data and specifically the Leadsville District during the summer of 2009. Any parcels that have undergone edits will need to be reviewed to ensure that annotation produced in the effected areas will match the edits from RCAO.
2. *Parcel ID Annotation*
   a. Automatically generating labels for multi-part parcels can result in multiple PIDs. Multiple PIDs should be edited to correctly display a single PID and subsequent part of parcel (p/o) annotations.
   b. The label engine can skip problematic labels generated automatically on certain parcels, which results in no label. This typically occurs when a PID is over 3 digits (i.e. Parcel 100 or 33.1), but can sometimes occur for two digit PIDs as well. This problem requires that each map is carefully reviewed to ensure that each parcel is correctly labeled, manually generating a label if necessary.
3. *Parcel Data Quality*
   a. The WVGISTC marked certain areas that may be incomplete or depict parcel areas incorrectly. These areas may be include gaps, overlapping, overly mis-shaped parcels or missing attributes information (no PIDs). Review points were created for RCAO personnel review of these areas.

4. *Land Hooks*
    a. The majority of land hooks were sourced and re-drawn from prior maps. There is a concern about the correct use of land hooks. In particular, using different mapping techniques may make using land hooks un-necessary. Computerized mapping and correct symbology can help limit the need for land hooks.
    b. The WVGISTC noted that more detailed land hook guidelines would be helpful in determining proper use and placement.

5. *Parcel Acreage*
    a. The state guidelines state that parcels with less than one acre do not need to display dimensions if they are in rural areas. Instead the parcel can be labeled with the acreage fraction (such as .04 ac.). However, it is unclear which maps and districts may be considered rural, and therefore do not need dimensions. Improved state guidelines could help determine the proper use and placement.
    b. The WVGISTC created review points for parcels without dimension data.

1200 Scale Maps

Some issues specific to the 1200 scale maps:
1. *Lot Lines*
    a. Lot line changes as compared to prior maps have made some lot numbers appear unnecessary, while other changes imply that lot numbers may need to be added. A substantial review of the lot line data is required.
2. *Lot Numbers*
    a. Lot numbers will also need to be reviewed when lot lines are adjusted.
    b. A future project may need to focus on adjusting lot lines and associated numbers.
3. *Dimensions*
    a. The WVGISTC has noted that there were a significant number of missing dimensions, specifically on 1200 scale maps. Review points have been created to flag these areas.
    b. The GIS transition between older maps and GIS revealed some inconsistencies between maps in how dimensions are displayed. Simple issues, like missing symbols for feet (') and missing parentheses around calculated dimensions (c) were corrected, but should receive more attention in the future.

4800 Scale Maps

Some issues specific to the 4800 scale maps:
1. *Leaders*
    a. Leader annotation was used where parcels are too small or too dense to fit the required annotation. Leaders were used only when necessary.
    b. Leader annotation was placed on adjacent parcels within the same map where possible; however, some were placed outside of the map area where parcels were crowded together. This may present an issue for map book if a shadow map is used and the area outside the map are not visible on the printed product.

2. Dimensions/Acres
    a. Parcels on many 1200 scale maps had missing dimensions and/or acreage annotation. Review points have been created for these areas, and this missing information should be evaluated by RCAO in subsequent reviews.
    b. Parcel ID annotation takes precedence over dimension and acres annotation as per state guidelines (189-3-7.6.b). This rule applies when there is not enough room on the map to label all of the required annotation, which caused many parcels in certain areas to have no dimension or acreage annotation. This was particularly true on many dense 4800 scale maps.

Map Grid Issues

Some issues specific to the Map Grid:
1. *Map Grid Extent*
    a. Certain maps have been noted as having extents that do not reflect the correct area of the actual map. The map grid should be reviewed for individual map extents; the area over which parcels are displayed on a single page. The WVGISTC created an MS Excel QC sheet that provides a list of maps that may have incorrect extents or may need adjustment.
2. *Map Rotation*
    a. Map rotation may have been changed on certain 1200 scale maps in order to allow greater coverage of the map parcels. This was only done in cases where the new rotation would improve the extent of map parcels shown from the prior rotation. A list of maps with altered rotations is also provided in the Excel QC document.
3. *Maps with no parcels*
    a. The WVGISTC noticed that there are maps in the map grid that do not contain any parcels, particularly 4800 scale maps.
4. *Maps Missing from the grid*
    a. The WVGISTC discovered parcels that did not correspond to the map grid. These parcels indicated that three maps were not located on the map grid. Review points were created for three of these maps (District 5 - Map 32 and District 17 - Maps 5 and 117).
5. *Incorrect Map name*
    a. The map grid lists District 04 as having two m=Map 113s. Although one of these entries is associated with district Map 04-0113, the other refers to DistMap 04-0171. This should be changed in the map grid table, or it may present problems when creating a Map Book.
6. *2400 scale maps*
    a. District 17 contains three maps that are 2400 scale. The WVGISTC created Parcel ID annotations, dimensions, lot numbers, and land hooks at the 2400 scale for these maps. These maps are permitted as a "grandfathered" map scale under the State Guidelines (189-3-7.2).
    b. The WVGISTC encourages RCAO to convert these parcels into either new 1200 scale maps or move them onto existing 4800 scale maps. The benefit of changing map scales is for the sake of uniformity over the entire county, which could also help in file management and the digital up-keep of these parcels. The WVGISTC recognizes that this changing parcels on a map can be an arduous task and therefore does not view this task as a high priority.

Recommendations

The WVGISTC has made observations working with the RCAO during this project that may help in the continued maintenance of the county parcel mapping system. The following recommendations fall outside of the primary scope of the project, but may otherwise be helpful.

Training: GIS training and education for RCAO staff should continue and be actively pursued to ensure that in-house GIS skills continue to expand and improve over time. Examples of training can involve attending professional short courses (Such as an ESRI Instructor lead course), attending GIS users group meetings and annual GIS conferences. Attending these functions not only enhance technical skills, but can often lead to communication between mutual parties with shared experiences and lessens learned.

RCAO should train alternate in-house employees to use the GIS mapping system to ensure in-house redundancy of the GIS systems continuity. These alternate employees should be familiar with the data and programs used to maintain the GIS system.

Outsourced Resources: We encourage RCAO to utilize state resources and private firms for technical support and guidance for proper and effective use of the county parcel GIS mapping system. Extended maintenance contracts can also provide continued technical support to RCAO staff as required skills necessary to sustain a functional GIS are developed.

Dedicated Mapper: Ultimately, the RCAO should consider the employment of a dedicated GIS mapping technician. The WVGISTC recognizes that funding a new position can be challenging. However, pursuit of a cooperative arrangement between other county agencies could provide the means necessary to provide a dedicated mapping technician to fund this position. The benefits of having a dedicated GIS professional can be numerous to both the RCAO and other agencies who could benefit from an in-house professional.