LIDAR DATA CHECKING REPORT

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December 15, 2010

GNSS observations were made on photo identifiable points on October 8, 9 and 10, 2010 by Anthony Huberty and Patrick Ford. A Trimble R8 GNSS model 3 rover receiver (s/n 4921172809) and TSC2 Survey Controller (s/n SS99C42242) linked to the Wisconsin Department of Transportation virtual reference network via a Cellcom Motorola cell phone. Including check points and other points of value 93 points were observed over the 3 days. The survey style was set to “Topo” for the point observations with the tolerances set at 0.006m (0.02’) horizontal and 0.009m (0.03’) vertical and points were occupied until enough data had been collected to satisfy the minimum requirements. No unusual events were recorded during any of the observations. Trimble Geomatics Office software was used to download the GNSS observations. No points were flagged as having RMS outside tolerances. There were no calibrations or adjustments made to the GNSS observations. Experience has shown that observations made with the virtual reference system do not typically produce horizontal errors greater than +/-0.15’ and limited vertical work showed differences from Federal bench marks in the +/-0.07 magnitude.

Not all points collected were suitable for checking LiDAR and efforts were made to select points that were on flat pavements. A total of 70 check points distributed evenly throughout the county were chosen to check the LiDAR dataset. AcMap was used to combine the Global Navigation Satellite System (GNSS) points with LiDAR data. The “Identify” tool was set to identify data on visible layers, the GNSS points were picked and the elevations returned from the Brown\_County\_Terrain layer were written down.

An Excel spreadsheet for determining the vertical accuracy was downloaded from the Federal Geodetic Data Committee (FGDC) was populated with the elevations from the LiDAR data and the elevations obtained in the GNSS observations. Elevations were entered in feet to the nearest 0.01 foot. All data entered into the spreadsheet was double checked for accuracy. The resulting RMSE is 0.207(z) and the NSSDA is 0.405(z). For a 2 foot contour interval “ASPRS Guidelines Vertical Accuracy Reporting for Lidar Data” requires a RMSE(z) of 0.61 and a NSSDA(z) of 1.19.

As part of the checking process I noted that check 14 points were outside the LiDAR information. Of the points one was approximately 60’ east of the county line, one was approximately 25’ east of the county line, one was 7’ north of the county line, 10 points were on the county line and one point was approximately 25’ inside the county line. There are only 3 of 9 check points on the east line of the county, 3 of 6 on the north line of the county and 3 of 6 points on the south line of the county covered by Lidar data. Given the quality of the data checked I believe data on the edges is acceptable but I am concerned that the data does not cover the entire county.