

# LIDAR Accuracy Assessment Report—Wilson County

## Wilson County, Neuse River Basin

The preliminary checkpoint spreadsheets were received from NCGS on November 8, 2001. Two spreadsheets were included for each county, which compared the independent QA/QC survey checkpoints with the interpolated LIDAR "Z" value as provided by the contractors. The spreadsheet summaries included:

1. All the checkpoints with the RMSE calculation for combined land cover
2. 95% of the checkpoints with the RMSE calculation (5% of points having the largest error removed)

All data was reviewed and further analyzed to assess the quality of the data. The review process examined the statistics for the combined land cover and the trends for each specific land cover type. The following graphs and figures illustrate the data quality as per the RMSE criteria.

Table 1 summarizes the RMSE using:

- 100% of the checkpoints
- 95% of the checkpoints
- Checkpoints categorized by land cover type

Table 1. RMSE by Land Class				
%	RMSE (cm)	# of Points	Land Class	RMSE Criteria (cm)
100	28.1	96	All	
<b>95</b>	<b>25.0</b>	<b>91</b>	<b>All</b>	<b>25</b>
15	27.0	14	Grass	
19	25.4	18	Weeds/Crop	
12	30.5	12	Scrub	
31	25.7	30	Forest	
18	15.8	17	Built-up	

The LIDAR data for Wilson County, Neuse Basin meets the specification as per the RMSE criteria of 25 cm.

All figures represent the data with the 95% data set. The data is of marginal quality and further review may be warranted. Each land cover type except for "Built-up" exceeds the RMSE criteria but when averaged, meets the required specification. Through the associated statistics, the data appears to have a systematic shift whereby the LIDAR data is too high. By reviewing the descriptive statistics and histogram it is clear that the data is skewed with the peak of errors between the -15 to -30 cm, i.e., the elevations are consistently too high.

# LIDAR Accuracy Assessment Report—Wilson County

Figure 1 illustrates the RMSE by specific land cover type.

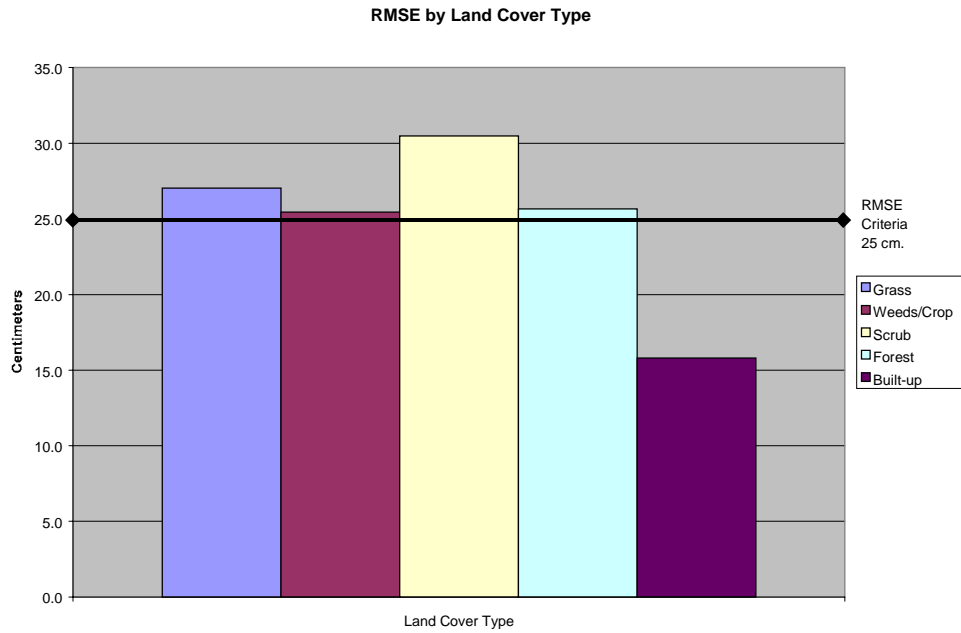
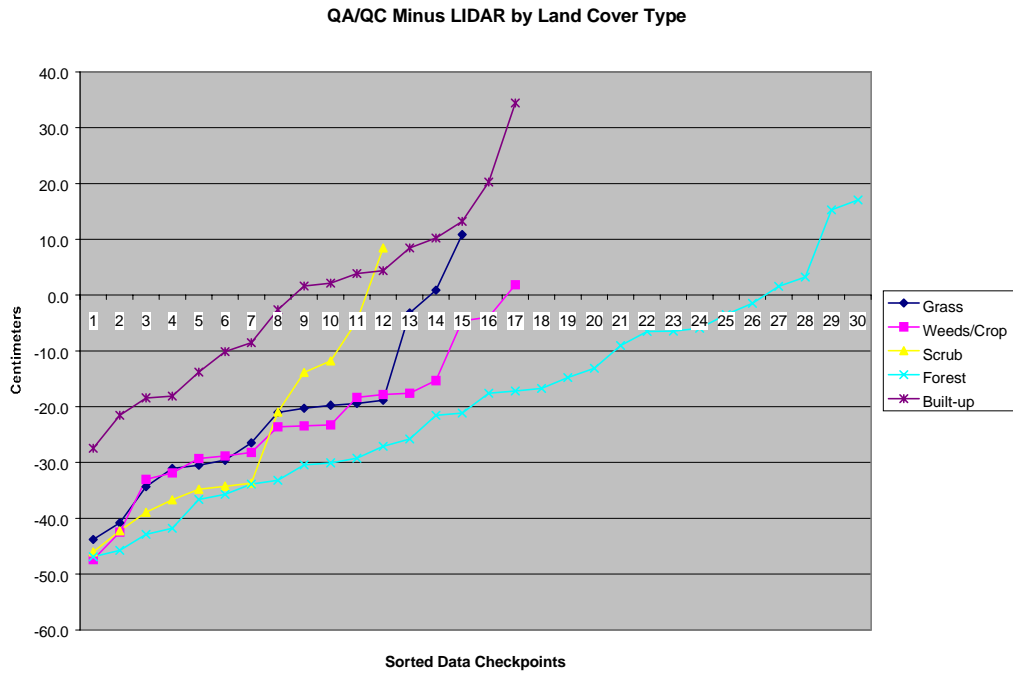


Figure 1

Figure 2 illustrates the magnitude of the differences between the checkpoints and LIDAR data by specific land cover type and sorted from lowest to highest.



## LIDAR Accuracy Assessment Report—Wilson County

**Figure 2**

Table 2 illustrates the Delta between the QA/QC survey checkpoints and that of the interpolated LIDAR.

<b>Table 2. Elevation Delta</b>					
<b>Delta (cm)</b>	<b>Land Cover</b>				
-43.8	Grass	-3.9	Weeds/Crop	-14.8	Forest
-40.8	Grass	1.9	Weeds/Crop	-13.1	Forest
-34.3	Grass	-46.1	Scrub	-9.0	Forest
-31.1	Grass	-42.2	Scrub	-6.5	Forest
-30.5	Grass	-38.9	Scrub	-6.5	Forest
-29.6	Grass	-36.7	Scrub	-5.9	Forest
-26.5	Grass	-34.8	Scrub	-3.5	Forest
-21.0	Grass	-34.3	Scrub	-1.5	Forest
-20.3	Grass	-33.7	Scrub	1.6	Forest
-19.7	Grass	-21.0	Scrub	3.2	Forest
-19.5	Grass	-13.8	Scrub	15.3	Forest
-18.8	Grass	-11.8	Scrub	17.0	Forest
-3.2	Grass	-4.6	Scrub	-27.5	Built-up
0.8	Grass	8.5	Scrub	-21.6	Built-up
10.8	Grass	-46.9	Forest	-18.4	Built-up
-47.4	Weeds/Crop	-45.7	Forest	-18.1	Built-up
-42.5	Weeds/Crop	-42.9	Forest	-13.8	Built-up
-33.0	Weeds/Crop	-41.8	Forest	-10.1	Built-up
-31.9	Weeds/Crop	-36.6	Forest	-8.5	Built-up
-29.3	Weeds/Crop	-35.7	Forest	-2.6	Built-up
-28.8	Weeds/Crop	-33.9	Forest	1.6	Built-up
-28.2	Weeds/Crop	-33.2	Forest	2.2	Built-up
-23.6	Weeds/Crop	-30.5	Forest	3.9	Built-up
-23.4	Weeds/Crop	-30.1	Forest	4.4	Built-up
-23.3	Weeds/Crop	-29.2	Forest	8.4	Built-up
-18.4	Weeds/Crop	-27.1	Forest	10.2	Built-up
-17.8	Weeds/Crop	-25.8	Forest	13.2	Built-up
-17.6	Weeds/Crop	-21.5	Forest	20.2	Built-up
-15.3	Weeds/Crop	-21.1	Forest	34.4	Built-up
-4.7	Weeds/Crop	-17.6	Forest		
		-17.2	Forest		
		-16.8	Forest		

Table 3 illustrates the overall statistics for the checkpoint data.

<b>Table 3. Overall Descriptive Statistics</b>								
	<b>RMSE (cm)</b>	<b>Mean (cm)</b>	<b>Median (cm)</b>	<b>Skew</b>	<b>Std Dev (cm)</b>	<b># of Points</b>	<b>Min (cm)</b>	<b>Max (cm)</b>
<b>Total</b>	<b>25.0</b>	-17.8	-19.5	0.5	17.7	91	-47.4	34.4
<b>Grass</b>	<b>27.0</b>	-24.2	-23.7	0.5	12.6	14	-43.8	0.8
<b>Weeds/Crop</b>	<b>25.4</b>	-20.9	-23.4	0.4	14.9	18	-47.4	10.8
<b>Scrub</b>	<b>30.5</b>	-25.8	-34.0	0.8	17.0	12	-46.1	8.5
<b>Forest</b>	<b>25.7</b>	-19.2	-19.3	0.3	17.3	30	-46.9	17.0
<b>Built-up</b>	<b>15.8</b>	-1.3	1.6	0.4	16.2	17	-27.5	34.4

Figure 3 illustrates a histogram of the associated delta errors between the data checkpoints and the interpolated TIN values.

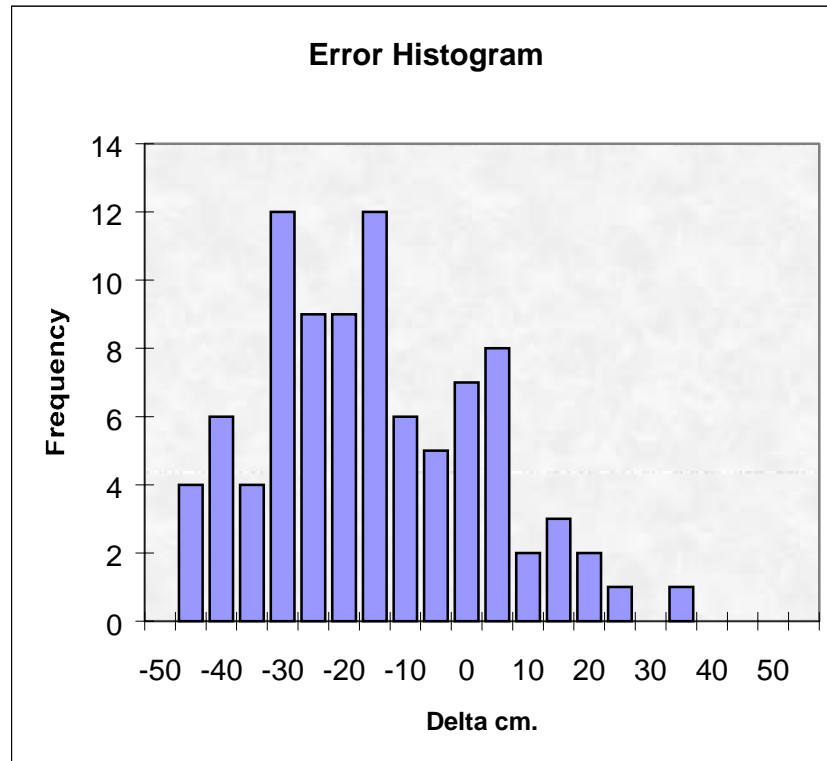


Figure 3