

# LIDAR Accuracy Assessment Report—Camden County

## Camden County, Pasquotank Basin

The preliminary checkpoint spreadsheets were received from NCGS on April 25, 2002. Two spreadsheets were included 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

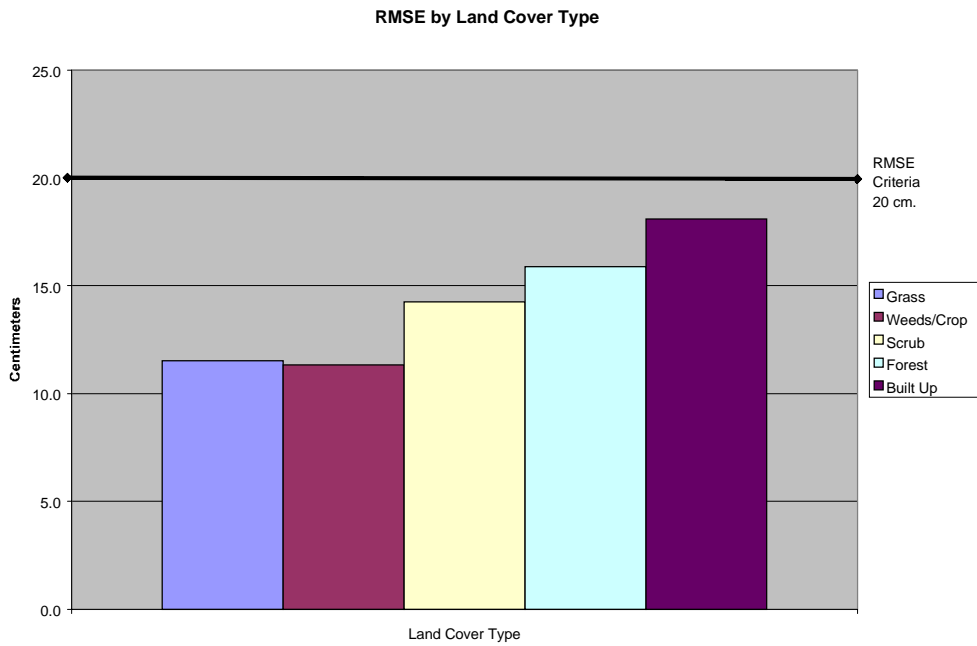
Table 1. RMSE by Land Class				
%	RMSE (cm)	# of Points	Land Class	RMSE Criteria (cm)
100	17.1	120	All	
<b>95</b>	<b>14.6</b>	<b>114</b>	<b>All</b>	<b>20</b>
17	11.5	20	Grass	
17	11.3	20	Weeds/Crop	
17	14.3	20	Scrub	
28	15.9	34	Forest	
17	18.1	20	Built-up	

The LIDAR data for Camden County, Pasquotank Basin meets the specification as per the RMSE criteria of 20 cm.

All figures represent the data with the 95% data set. The data is of good quality.

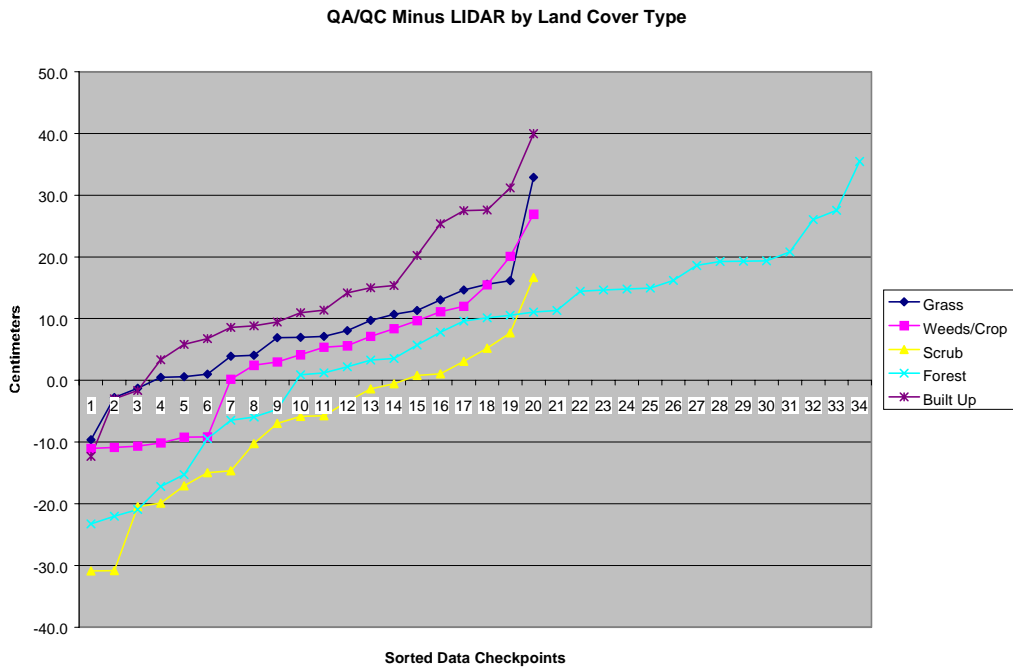
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Figure 1 illustrates the RMSE by specific land cover type.



**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.



**Figure 2**

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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>				
-9.6	Grass	20.1	Weeds/Crop	10.5	Forest
-2.8	Grass	26.9	Weeds/Crop	11.0	Forest
-1.3	Grass	-30.9	Scrub	11.3	Forest
0.5	Grass	-30.8	Scrub	14.5	Forest
0.6	Grass	-20.5	Scrub	14.7	Forest
1.0	Grass	-19.9	Scrub	14.8	Forest
3.9	Grass	-17.1	Scrub	14.9	Forest
4.1	Grass	-15.0	Scrub	16.2	Forest
6.9	Grass	-14.7	Scrub	18.6	Forest
7.0	Grass	-10.3	Scrub	19.2	Forest
7.1	Grass	-7.0	Scrub	19.3	Forest
8.0	Grass	-5.8	Scrub	19.4	Forest
9.7	Grass	-5.7	Scrub	20.8	Forest
10.7	Grass	-3.5	Scrub	26.0	Forest
11.3	Grass	-1.4	Scrub	27.6	Forest
13.0	Grass	-0.5	Scrub	35.5	Forest
14.7	Grass	0.8	Scrub	-12.3	Built-up
15.5	Grass	1.1	Scrub	-3.0	Built-up
16.1	Grass	3.1	Scrub	-1.6	Built-up
32.9	Grass	5.2	Scrub	3.3	Built-up
-11.0	Weeds/Crop	7.7	Scrub	5.8	Built-up
-10.9	Weeds/Crop	16.7	Scrub	6.8	Built-up
-10.6	Weeds/Crop	-23.3	Forest	8.6	Built-up
-10.2	Weeds/Crop	-22.0	Forest	8.8	Built-up
-9.2	Weeds/Crop	-20.9	Forest	9.5	Built-up
-9.2	Weeds/Crop	-17.2	Forest	11.0	Built-up
0.2	Weeds/Crop	-15.3	Forest	11.4	Built-up
2.4	Weeds/Crop	-9.5	Forest	14.2	Built-up
3.0	Weeds/Crop	-6.5	Forest	15.0	Built-up
4.1	Weeds/Crop	-6.0	Forest	15.3	Built-up
5.4	Weeds/Crop	-4.7	Forest	20.3	Built-up
5.6	Weeds/Crop	0.9	Forest	25.4	Built-up
7.1	Weeds/Crop	1.2	Forest	27.5	Built-up
8.4	Weeds/Crop	2.2	Forest	27.6	Built-up
9.7	Weeds/Crop	3.3	Forest	31.2	Built-up
11.1	Weeds/Crop	3.5	Forest	40.0	Built-up
12.0	Weeds/Crop	5.7	Forest		
15.5	Weeds/Crop	7.8	Forest		
		9.6	Forest		
		10.2	Forest		

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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 (cm)</b>	<b>Std Dev (cm)</b>	<b># of Points</b>	<b>Min (cm)</b>	<b>Max (cm)</b>
<b>Total</b>	<b>14.6</b>	4.8	5.8	-0.2	13.9	114	-30.9	40.0
<b>Grass</b>	<b>11.5</b>	7.5	7.0	0.8	9.0	20	-9.6	32.9
<b>Weeds/Crop</b>	<b>11.3</b>	3.5	4.8	0.2	11.0	20	-11.0	26.9
<b>Scrub</b>	<b>14.3</b>	-7.4	-5.8	-0.3	12.5	20	-30.9	16.7
<b>Forest</b>	<b>15.9</b>	6.3	9.9	-0.4	14.8	34	-23.3	35.5
<b>Built Up</b>	<b>18.1</b>	13.2	11.2	0.2	12.7	20	-12.3	40.0

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

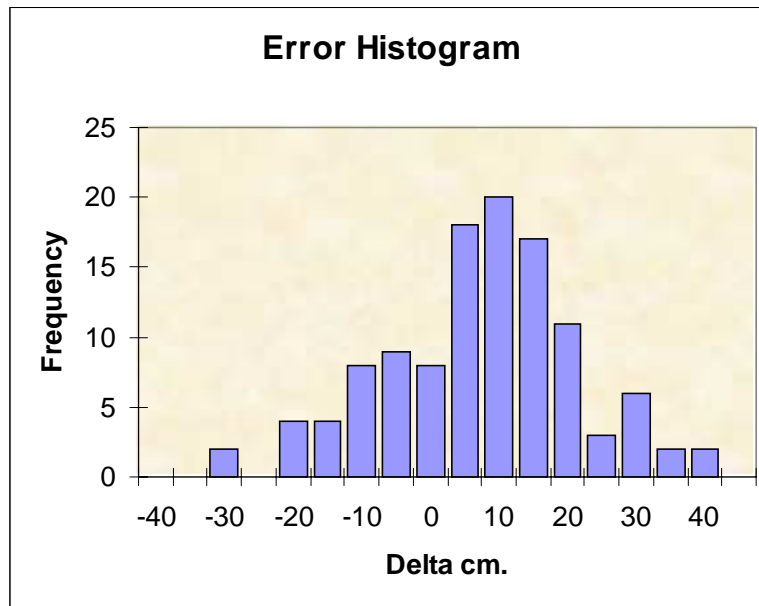


Figure 3