Perquimans 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	15.0	128	All	
95	**12.9**	**122**	**All**	**20**
21	8.0	27	Grass	
15	10.5	19	Weeds/Crop	
15	12.1	19	Scrub	
27	18.1	35	Forest	
17	10.4	22	Built-up	

The LIDAR data for Perquimans 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.

Figure 1 illustrates the RMSE by specific land cover type.

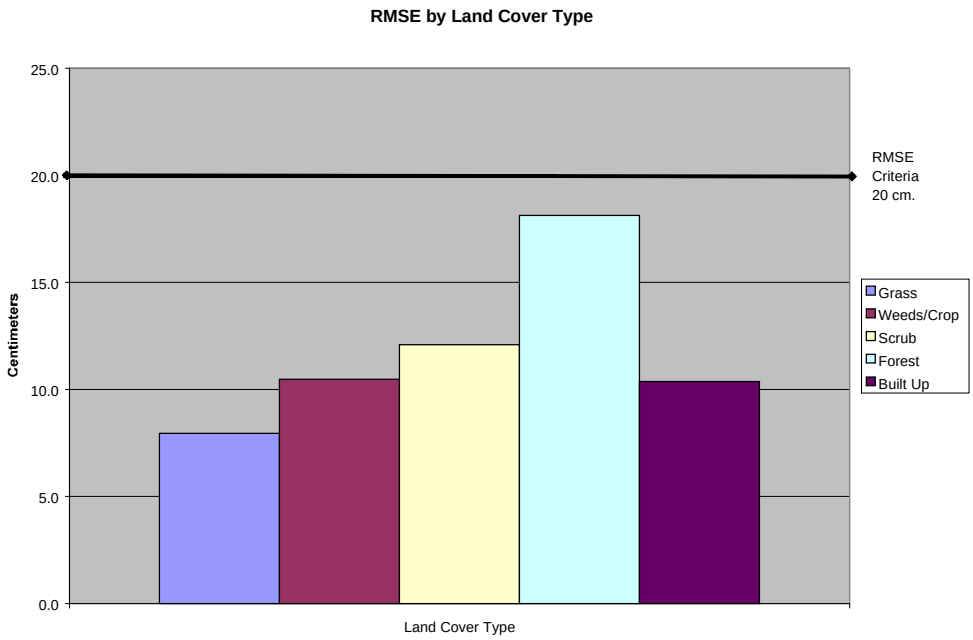

Figure 1

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

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

Table 2. Elevation Delta	
Delta (cm)	**Land Cover**
-19.2	Grass
-8.3	Grass
-5.6	Grass
-5.1	Grass
-3.0	Grass
-0.3	Grass
0.1	Grass
0.7	Grass
1.0	Grass
1.8	Grass
1.9	Grass
4.0	Grass
4.1	Grass
4.4	Grass
4.5	Grass
4.7	Grass
5.3	Grass
5.8	Grass
6.1	Grass
6.4	Grass
7.2	Grass
9.5	Grass
12.0	Grass
12.2	Grass
12.3	Grass
13.1	Grass
14.3	Grass
-24.4	Weeds/Crop
-8.9	Weeds/Crop
-6.3	Weeds/Crop
-6.0	Weeds/Crop
-3.1	Weeds/Crop
-1.1	Weeds/Crop
-0.1	Weeds/Crop
2.0	Weeds/Crop
2.3	Weeds/Crop
2.9	Weeds/Crop
3.3	Weeds/Crop
3.9	Weeds/Crop
4.5	Weeds/Crop
5.8	Weeds/Crop
7.3	Weeds/Crop
7.5	Weeds/Crop
9.7	Weeds/Crop
18.0	Weeds/Crop
26.5	Weeds/Crop
-24.2	Scrub
-23.6	Scrub
-21.4	Scrub
-12.9	Scrub
-11.0	Scrub
-9.9	Scrub
-9.6	Scrub
-9.4	Scrub
-9.0	Scrub
-7.2	Scrub
-6.9	Scrub
-6.5	Scrub
-5.9	Scrub
-5.9	Scrub
-3.2	Scrub
-2.5	Scrub
5.9	Scrub
11.1	Scrub
12.2	Scrub
-21.8	Forest
-15.2	Forest
-9.5	Forest
-2.3	Forest
0.2	Forest
3.4	Forest
5.9	Forest
7.9	Forest
8.5	Forest
10.8	Forest
11.3	Forest
11.5	Forest
11.9	Forest
12.4	Forest
12.9	Forest
14.2	Forest
14.8	Forest
15.7	Forest
16.1	Forest
16.6	Forest
16.7	Forest
17.0	Forest
17.3	Forest
17.5	Forest
20.3	Forest
22.1	Forest
22.7	Forest
22.8	Forest
24.4	Forest
24.8	Forest
26.7	Forest
28.3	Forest
29.3	Forest
29.7	Forest
30.0	Forest
-11.3	Built-up
-2.3	Built-up
-1.6	Built-up
1.3	Built-up
1.7	Built-up
2.1	Built-up
3.1	Built-up
3.3	Built-up
3.5	Built-up
4.9	Built-up
5.0	Built-up
5.5	Built-up
6.4	Built-up
6.7	Built-up
9.5	Built-up
10.5	Built-up
11.2	Built-up
11.7	Built-up
12.1	Built-up
15.8	Built-up
21.5	Built-up
26.5	Built-up

Table 3 illustrates the overall statistics for the checkpoint data.

Table 3. Overall Descriptive Statistics								
	RMSE (cm)	Mean (cm)	Median (cm)	Skew (cm)	Std Dev (cm)	# of Points	Min (cm)	Max (cm)
Total	**12.9**	5.0	5.0	-0.2	12.0	122	-24.4	30.0
Grass	**8.0**	3.3	4.4	-1.0	7.4	27	-19.2	14.3
Weeds/Crop	**10.5**	2.3	2.9	-0.2	10.5	19	-24.4	26.5
Scrub	**12.1**	-7.4	-7.2	0.3	9.9	19	-24.2	12.2
Forest	**18.1**	13.6	15.7	-1.1	12.2	35	-21.8	30.0
Built Up	**10.4**	6.7	5.3	0.5	8.1	22	-11.3	26.5

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

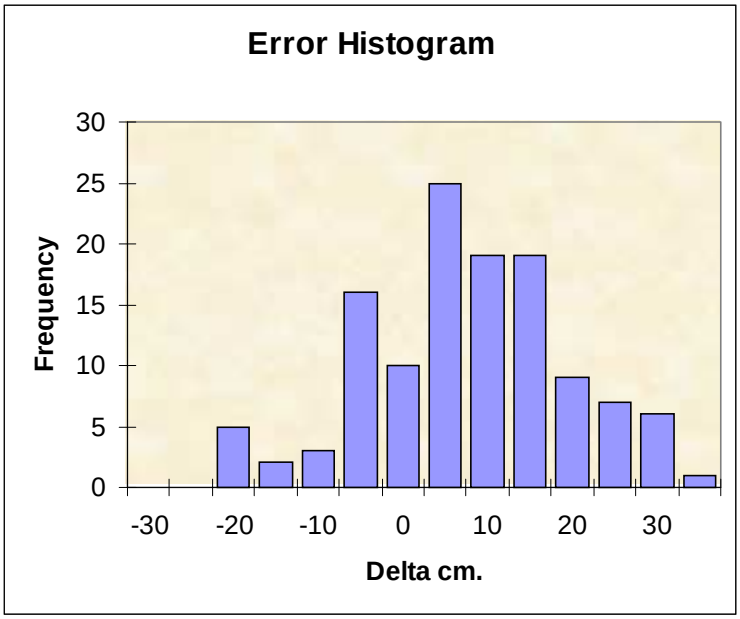

Figure 3