ACCURACY REPORT

FEMA Region 6 – Arkansas QL2 LiDAR
Lower Black Watershed

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Prepared for

United States Geological Survey
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1   ACCURACY REPORTING

Data collected under this Task Order meets the National Standard for Spatial Database Accuracy (NSSDA) accuracy standards. The NSSDA standards specify that vertical accuracy be reported at the 95 percent confidence level for data tested by an independent source of higher accuracy.

1.1   Positional Accuracy

The absolute and relative accuracy of the data, relative to known control, were verified prior to classification and subsequent product development.

The achieved accuracy of the Raw LiDAR Point Cloud in the "open terrain" land cover category of the ground control and check points tested at 95% confidence level is:

- Lower Black Watershed: 5.89 cm

Please refer to Attachment A: Lower Black Watershed Positional Accuracy Report for further details.

1.2   Relative Accuracy

Relative accuracy is <= 6 cm $RMSE_Z$ within individual swaths and <=8 cm $RMSE_Z$ or within swath overlap (between adjacent swaths).

1.3   Accuracy of the LiDAR Point Cloud Data

The Fundamental Vertical Accuracy (FVA) of the LiDAR Point Cloud data was calculated against TINs derived from the final calibrated and controlled swath data. The required accuracy (ACC_Z) is: 18.13 cm at a 95% confidence level, derived according to NSSDA, i.e., based on RMSE of 9.25 cm in the "open terrain" land cover category. This is a required accuracy.

The achieved accuracy of the Raw LiDAR Point Cloud in the "open terrain" land cover category of the check points tested at 95% confidence level is:

- Lower Black Watershed: 10.07 cm

Please refer to Attachment B: Lower Black Watershed Raw LiDAR Point Cloud Accuracy Report for further details.

1.4   Accuracy of the Derived DEM

The accuracy (ACC_Z) of the derived DEM was calculated and reported in three (3) ways:

1. **Fundamental Vertical Accuracy (FVA):** The required FVA is: 18.13 cm at a 95% confidence level, derived according to NSSDA, i.e., based on RMSE of 9.25 cm in the "open terrain" land cover category. This is a required accuracy.

2. **Supplemental Vertical Accuracy (SVA):** SVAs shall be reported for each of the land cover classes. The target SVA is: 36.3 cm at a 95th percentile level, derived according to ASPRS Guidelines, Vertical Accuracy Reporting for LiDAR Data, i.e., based on the 95th percentile error for each required land cover class. These are target accuracies.

3. **Consolidated Vertical Accuracy (CVA):** The required CVA is: 36.3 cm at a 95th percentile level, derived according to ASPRS Guidelines, Vertical Accuracy Reporting for LiDAR Data, i.e., based on the 95th percentile error in all land cover categories combined. This is a required accuracy.

Please refer to the tables below for the achieved accuracies; the tables show the FVA calculated at 95% confidence level from the DEM; and CVA and SVA calculated as 95th percentile error from the DEM.

Land Cover Category	# of Points	FVA Fundamental Vertical Accuracy (RMSE$_Z$ * 1.960) Spec=18.13 cm *From DEM*	CVA Consolidated Vertical Accuracy (95th Percentile) Spec=36.3 cm *From DEM*	SVA Supplemental Vertical Accuracy (95th Percentile) Spec=36.3 cm *From DEM*
Consolidated	21		10.9 cm	
Bare Earth / Open Terrain	7	11.25 cm		9.85 cm
Tall Brush / Crops	7			9.41 cm
Woods	7			15.89 cm

Table 1: Accuracy of the Derived DEM for Lower Black Watershed