

2.13.1 Report on Positional Accuracy Validation

The USGS LiDAR Base Specification Version 1.0 states that: "Before classification of and development of derivative products from the point cloud, verification of the vertical accuracy of the point cloud, absolute and relative, is required. The Fundamental Vertical Accuracy (absolute) is to be assessed in clear, open areas as described in the section called Vertical Accuracy above. Swath-to-swath and within swath accuracies (relative) are to be documented. A detailed report of this validation process is a required deliverable."

The purpose of this section is to compare the fundamental vertical accuracy of the LiDAR swath data and the tiled data measured against surveyed ground check points. The reason for this comparison is to ensure that inappropriate steps were not taken after the filtering process to "warp" the LiDAR data to control/check points. The control check statistics of each dataset should look very similar, with only constant offsets as differences or variations due to the filtering process.

This reports only the Fundamental Vertical Accuracy (FVA)

E:\Pope_Hardin_Counties\QAQC_final\2_13\Report_PositionalAccuracy.csv

Vertical Units: US Survey Feet (/Meter)

| | Boresighted Data | Classified Data |
|--|----------------------------|-----------------|
| Control Points | 20 | 20 |
| Points with Coverage | 20 | 20 |
| Points With Required Accuracy | 20 | 20 |
| Percent of Points With Required Accuracy | 100.000% | 100.000% |
| Average Z Error | 0.140/0.043 | 0.091/0.028 |
| Maximum Z Error | 0.520/0.158 | 0.365/0.111 |
| Median Z Error | 0.103/0.031 | 0.107/0.033 |
| Minimum Z Error | -0.187/-0.057 | -0.308/-0.094 |
| NSSDA Vertical Accuracy | at the 95 confidence level | 0.432/0.132 |
| Standard Deviation (sigma) of Z for Sample | 0.175/0.053 | 0.149/0.045 |
| RMSE of Z for Sample | 0.220/0.067 | 0.171/0.052 |
| FGDC/NSSDA/FEMA Contour Interval | 0.800/0.244 | 0.600/0.183 |
| ASPRS Contour Interval | 0.700/0.213 | 0.600/0.183 |
| NMAS Contour Interval | 0.800/0.244 | 0.600/0.183 |

| ID | X | Y | Z | Covered | Z From LiDAR | Z Error | Covered | Z From LiDAR | Z Error |
|-----|------------|------------|---------|---------|--------------|---------|---------|--------------|---------|
| 101 | 897893.808 | 329333.495 | 801.275 | True | 801.289 | 0.014 | True | 801.383 | 0.108 |
| 102 | 899302.788 | 314681.585 | 719.119 | True | 719.155 | 0.036 | True | 719.231 | 0.112 |
| 103 | 933958.155 | 339083.482 | 721.754 | True | 721.805 | 0.051 | True | 721.735 | -0.019 |
| 104 | 956383.612 | 318220.013 | 510.478 | True | 510.543 | 0.065 | True | 510.543 | 0.065 |

2.13.1 Report on Positional Accuracy Validation - continued

| ID | X | Y | Z | Covered | Z From LiDAR | Z Error | Covered | Z From LiDAR | Z Error |
|-----|-------------|------------|---------|---------|--------------|---------|---------|--------------|---------|
| 105 | 998529.417 | 336540.469 | 740.353 | True | 740.390 | 0.037 | True | 740.404 | 0.051 |
| 106 | 1009796.652 | 331635.334 | 606.104 | True | 606.161 | 0.057 | True | 606.062 | -0.042 |
| 107 | 1024050.268 | 331451.840 | 388.661 | True | 388.741 | 0.080 | True | 388.741 | 0.080 |
| 108 | 1036714.941 | 292535.724 | 476.653 | True | 476.769 | 0.116 | True | 476.579 | -0.074 |
| 109 | 1013616.286 | 288291.690 | 348.359 | True | 348.500 | 0.141 | True | 348.574 | 0.215 |
| 110 | 992991.311 | 284241.807 | 398.421 | True | 398.803 | 0.382 | True | 398.622 | 0.201 |
| 111 | 980182.649 | 274608.276 | 339.281 | True | 339.479 | 0.198 | True | 339.406 | 0.125 |
| 112 | 967449.824 | 281986.615 | 397.535 | True | 398.009 | 0.474 | True | 397.900 | 0.365 |
| 113 | 941432.563 | 256917.108 | 339.930 | True | 340.137 | 0.207 | True | 340.155 | 0.225 |
| 114 | 905921.715 | 279231.167 | 616.702 | True | 616.994 | 0.292 | True | 617.007 | 0.305 |
| 115 | 902871.124 | 259823.335 | 397.233 | True | 397.753 | 0.520 | True | 397.388 | 0.155 |
| 116 | 892565.876 | 236280.836 | 465.698 | True | 465.876 | 0.178 | True | 465.805 | 0.107 |
| 117 | 887193.439 | 261003.691 | 499.599 | True | 499.489 | -0.110 | True | 499.531 | -0.068 |
| 118 | 924648.026 | 216206.438 | 527.673 | True | 527.763 | 0.090 | True | 527.728 | 0.055 |
| 119 | 934490.588 | 214366.389 | 333.969 | True | 333.782 | -0.187 | True | 333.661 | -0.308 |
| 120 | 950881.491 | 166035.993 | 345.331 | True | 345.482 | 0.151 | True | 345.487 | 0.156 |