



**Minnesota Department of Transportation**

Photogrammetric Unit  
395 John Ireland Boulevard, MS 640  
Saint Paul, MN 55155

30 June 2014

Eric Ratcliffe  
STARR MT-1 Project Manager  
Atkins Global  
3901 Calverton Boulevard, Suite 400  
Calverton, MD, 20705



RE: Certification of Minnesota LiDAR Quality  
Red River Valley Project – Priority Area 3

Dear Mr. Ratcliffe:

Attached you will find a signed and sealed Certification Statement for LiDAR Data that was collected independently by the International Water Institute (IWI) and its partners for the following counties: Becker, Beltrami, Clearwater, Lake of the Woods, Mehnomen and Otter Tail. The Minnesota Department of Transportation, in partnership with the Minnesota Department of Natural Resources and the IWI, helped prepare Request for Proposals, served on the selection committee and provided guidance. Initial quality assurance was provided by Houston Engineering, Inc. and we collected independent test points in order to validate the contract deliverables. The Minnesota counties were part of a larger project and which fell outside of Minnesota.

If you have any additional questions concerning the testing process, please contact me at 651.366.3457.

Sincerely,

Peter W. Jenkins, PLS, CFedS  
Photogrammetric Unit Supervisor

Enclosures: Certification Letter

cc: S. Jiwani  
T. Loesch

An Equal Opportunity Employer





## Certification of Minnesota LiDAR Data Quality

Project Area: Red River Valley Project, Minnesota

Counties covered: Becker, Beltrami, Clearwater, Lake of the Woods, Mehnomen and Otter Tail.

Date of acquisition: 21 April 2009 to 30 May 2009

Horizontal Positional Accuracy: All these data products were acquired at 2400 meters above mean terrain (AMT) and have a horizontal accuracy of less than one meters, with a nominal point spacing of 1.35 meters.

Vertical Positional Accuracy: Accuracy of the dataset was verified by a second set of ground control points provided by each County and tested by the State of Minnesota. The Consolidated Vertical Accuracy (CVA) of the TIN as tested by the State of Minnesota of all land cover categories covering the 5 land classes as defined by ASPRS and NDEP were used in this evaluation. The vertical RMSE, 95% Confidence Level, and the sample count per county as tested by the State of Minnesota is as follows: Becker, 0.128m (RMSE), 0.251m (95%), 120 points; Beltrami, 0.118m (RMSE), 0.231m (95%), 126 points; Clearwater, 0.163m (RMSE), 0.319m (95%), 100 points; Lake of the Woods, 0.159m (RMSE), 0.311m (95%), 104 points; Mehnomen, 0.113m (RMSE), 0.221m (95%), 200 points and Otter Tail, 0.144m (RMSE), 0.281m (95%), 99 points.

This is to certify that the work summarized above was completed in accordance with sound and accepted surveying practices and meets the accuracy requirements in the USGS's Lidar Guidelines and Base Specifications.



Peter Jenkins, PLS, CFedS  
MN PLS # 22683



Photogrammetric Unit Supervisor  
Minnesota Department of Transportation