

Bluestone Lake and Downstream 2009 Digital Terrain Model

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Overview

The Bluestone Lake and Downstream 2009 Bare-Earth DTM (digital terrain model) is a digital representation of the terrain derived from a bare-earth LiDAR data set and photogrammetrically compiled breaklines. A digital terrain model (DTM) is a cartographic representation of the terrain expressed in horizontal and vertical units. The DTM consists of irregularly spaced points in the x and y direction and z values and breaklines of significant topographic features. The Bluestone Lake and Downstream 2009 Bare-Earth DTM is void of vegetation and man-made features. To enhance the surface and ensure that it would be suitable for two-foot contours, breaklines were compiled and used in the final DTM. To meet the specifications of the statement of work the following instructions were documented, monitored, and verified in the Quality Control Plan before submitting the dataset. The Bluestone Lake and Downstream dataset is

- Provided in Microstation v8 design files that are compliant with the Spatial Data Standards for Facilities, Infrastructure, and Environment (SDSFIE) format.
- Tiled to WVASAMB10-FT tile layout
- Referenced to the vertical and horizontal spatial reference specified in the Scope of Work
- Edge-matched between tiles and across the dataset. There are no gaps, edge artifacts of mismatch between tiles.
- Produced from the bare-earth processed LiDAR data using breakline data where collected as specified.
- Compliant with the SDSFIE release 2.600 standards

Processing

The Bluestone Lake and Downstream 2009 DTM's were created from the classified bare-earth class of the Bluestone Lake and Downstream 2009 LAS files (LAS version 1.2) and photogrammetrically compiled breaklines. Before DTM creation began, the breaklines were compared to the LiDAR surface elevations and areas that did not match were corrected. The most common errors involved breaklines digging into or floating above the LiDAR surface. The breaklines were also checked along the tile seams and the gradual slope of the main channel was verified.

To facilitate the generation of the DTM, the x, y, and z values of the points representing the bare-earth surface were extracted and saved as an LAS file using Terrasolids software package. Once the breakline quality control processes were complete, the breaklines were clipped into tiles representing the clients tiling scheme. The points were then ready to be read into the design files using a manual process. Before the process began, the V-TOPO-DTMP level of the design files were identified and all other layers were turned off. Using Terrasolid's Terrascan the points were inserted into the Microstation design file containing the photogrammetrically compiled breaklines. After the points were inserted, the point coverage was checked to ensure that each data set was complete and all of the layers were turned on.

Quality Control

The Bluestone Lake and Downstream 2009 Bare-Earth DTM quality control procedures were thorough and documented. To verify the coverage and completeness of the DTM, each tile was opened and inspected against the client provided tiling scheme and project boundary. The quality control staff ensured that there were no data voids or errors in the DTM. Before delivery, the datasets were compared against the scope of work to ensure that all of the requirements were met.