

Arial Photography & Image Acquisition Summary

In the early spring of 2005, the Licensee contracted to have a qualified vendor collect digital aerial ortho-photography for the entire Keowee-Toxaway Project. The digital aerial photography of the Keowee-Toxaway Project utilized a series of individual photographs taken from multiple flight lines of each lake to produce a wide area ortho-mosaic that appears as a seamless image. A wide area ortho-mosaic comprises imagery from multiple image frames that have been ortho-rectified to a digital elevation model (DEM), geo-registered, combined to eliminate overlap, and radiometrically corrected. The imagery is collected in sets of multiple, parallel flight lines running either north-south or east-west. The final mosaic is a finely gridded (3-foot) 24-bit color image map constructed directly from digital aerial imagery. The color image and brightness of each mosaic pixel is determined by geometrically mapping that pixel to an image frame from the digital camera, with geometric corrections and radiometric corrections applied.

The aerial photography data was incorporated into the GIS system as a backdrop to allow the Jocassee SMP shoreline classification data to be edited to match the photography and the Project boundary. Other base level data was edited as necessary to establish the proper geographical relationships. The process for modifying the SWFHS data to match the digital aerial photography involved realigning the SWFHS data to match the approximate full pond contour for easily discernable shoreline areas.

The digital ortho-photos of the Project area around Lake Keowee and Jocassee were then scanned to produce color digital ortho-photos with a resolution of 0.5 foot per pixel. Airborne GPS and ground control was collected to support the digital aerial triangulation (DAT) and the Ortho-photo generation. The digital ortho-photos were produced to meet NMAS for 1"=200' mapping. The standard projection is South Carolina SPCS NAD 83 U.S. survey foot; the vertical datum is NAVD88. Each individual tile measures 7,500 feet (E-W) and 6,250 feet (N-S) direction. Each tile is completely covered with color digital ortho-imagery.

The basic file format for each ortho-photo tile is GeoTIFF file format with world file. Compressed MrSID images by tile are derived from the original GeoTIFF file format.

The Digital Terrain Model (DTM) was developed for the generation of the digital ortho-photos as masspoints and breaklines and was incorporated into the GIS as Arc 3D shape files.

