Quantifying Material Removed as a Result of the 2002 Flood at Canyon Lake: A GIS Analysis

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ABSTRACT

On July 4, 2002, the Canyon Lake reservoir breached its spillway after the watershed received 34 inches of rain in a matter of days. In roughly 24 hours, an impressive gorge was carved from the hillside, spanning a distance of more than a mile, with depths approaching 50 feet. Remote sensing techniques were employed to quantify the volume of material removed from the hillside by this catastrophic flood event. Analysis was performed using digital elevation models (DEM), lidar, and ArcGIS software. Publicly available, high resolution post-flood lidar data was resampled for comparison with lower resolution pre-flood DEM data, with conservative results indicating more than 3 million cubic meters of earth were removed during this single flood event.

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