

## **Catastrophism Revisited in Missouri: Mapping Exposed Flood Features in the Taum Sauk Reservoir Outwash Zone**

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In the early morning hours of December 14, 2005, a portion of the northwest wall of the Upper Taum Sauk Reservoir failed, releasing approximately 1.5 billion gallons of water down the western slope of Proffit Mountain (Reynolds County, Missouri). The resulting flood waters had devastating effects on down valley systems.

A 2.6 km (1.6 mile) long side canyon draining the western slope of Proffit Mountain was eroded locally of soil, colluvium, alluvium, and bedrock following the breach of the upper reservoir. Initial assessment of these post-failure erosional and depositional features was conducted by a team of scientists from the U.S. Geological Survey and the University of Missouri-Rolla. Field data was collected by traversing the channel and making detailed field notes and sketches using topographic maps and aerial photographs. Waypoints were collected along facies contacts using a handheld Global Positioning System unit. Post-field analysis used waypoint data combined with light detection and ranging (LiDAR) elevation data, and high resolution (15 cm) digital aerial images to compile a draft geologic map.

Preliminary results of the investigation suggest that highly variable flow regimes have affected different segments of the valley in different ways. New bedrock exposures include Precambrian felsic porphyries, granitic sequences, a highly weathered mafic unit, a paleoweathered boulder field, and Cambrian-aged basal dolomite and sandstone sediments in unconformable contact with the Precambrian rocks. Other portions of the valley were partially filled with sediment debris derived from the erosion of the previously mentioned units plus debris from the failed dam structure.