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Abstract: Over the past eighty years, the Rio Chama, a major tributary of the Rio Grande in New Mexico, has been subject to significant disruption of historic hydrological flow regimes due to water use demands. In recent years, a multiagency management effort has been initiated to restore some measure of historic flow regimes in the 39.6 km congressionally designated Wild and Scenic stretch through the Rio Chama Canyon Wilderness. We collaborated with managers at the US Army Corps of Engineers to collect approximately 15,870 frames of 10cm resolution multispectral imagery of the 82 km stretch of the river between El Vado Dam and Abiquiu Dam, which includes the Wild and Scenic area. Through structure-from-motion and multi-view stereo processing, a 20cm resolution digital surface model (DSM) and 10cm orthomosaic were generated. This imagery will be used for a variety of research and management purposes, but here we present the results of an experiment examining the impact of oblique-angle imagery on vertical error rates in DSMs. Two DSMs were derived from a subset of 1,674 frames of the aerial imagery, one with nadir imagery only and one with an additional 187 frames of oblique imagery flown at a 10 degree angle relative to the horizon. We used vertical root mean square error of check points collected with RTK positioning to evaluate vertical accuracy of the DSMs.