A preliminary geologic map of the Bull Gap quadrangle, Lincoln County, southeastern New Mexico

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The Bull Gap Quadrangle is located in the northern Tularosa Basin, south of Carrizozo and north of Oscura, New Mexico. The topography is primarily low, rolling country with a long hogback of Cretaceous strata trending north-south in the center of the map, and the Carrizozo lava flow trending northeast-southwest across the quadrangle. Exposures of Permian and Cretaceous strata are present in the center of the map area and large tracts of modern alluvium and older fan deposits from the Sacramento Mountains cover bedrock geology to the east. The western one third of the quadrangle lies to the north, south, and east of bedrock uplands and surficial clastic sediments in this area are classified as piedmont deposits with relative age designations based on inset relationships. The Carrizozo lava flow, ~5 ka in age, trends southwest to northeast across the center of the quadrangle. An unnamed Tertiary age (?) conglomerate is locally incised into underlying Cretaceous strata and its base is an angular unconformity with older strata. Tertiary igneous intrusives occur as both sills and dikes and are presumably related to the Oligocene Sierra Blanca volcanic field. Sills observed in the field area are felsic to intermediate in composition and often have porphyritic textures. Dikes in the map area are oriented east-west to southeast-northwest and tend to be short in length (less than 0.75 km). Permian strata in the Bull Gap area include the San Andres Formation and the overlying Grayburg Formation of the Artesia Group, which are overlain by the Lower to Middle Triassic Moenkopi Formation. Cretaceous strata include the Dakota Sandstone that forms the distinctive hogback in the center of the map area, the lower tongue of the Mancos Shale, Tres Hermanos Formation, D-Cross Tongue of the Mancos Shale, Gallup Sandstone and the Crevasse Canyon Formation. The limestones in the lower tongue of the Mancos Shales are the Bridge Creek Beds. Faults in the Bull Gap quadrangle are primarily oblique-slip faults and oriented northwest-southeast to east-west. Both right lateral and left lateral strike slip motion are evident and slickenline lineations observed at a few localities are steeply inclined. A few faults trend north-south to northeast-southwest and appear to be primarily normal faults. These faults are primarily down to the west and are presumably part of the Neogene extensional structural fabric.

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