

Mayhill Quadrangle Unit Descriptions:

Permian Rocks

Py: Permian Yeso Formation

A heterogeneous unit of mudstone, limestone, dolomite, and evaporates, the Yeso occurs mainly in canyon bottoms and lower slopes in the eastern part of the map area. The Yeso is best recognized by pinkish-red to yellow claystones and siltstones. Evaporite lithologies, mainly gypsum in surface exposures, are less common in the upper part of the Yeso exposed in the Mayhill quadrangle. Carbonate occurs throughout the Yeso, yet is more common near the top of the Yeso, generally above a thick package of mudstones. Yeso carbonate is generally more tan in color and more thinly bedded than the gray carbonates of the Rio Bonito member of the San Andres formation. Measured sections of the Yeso range from ~ 1200 to 1500 feet in thickness (Pray, 1961)

Psr: Rio Bonito Member of the Permian San Andres Formation

The Rio Bonito member of the San Andres formation is a gray to brownish gray locally fossiliferous micritic limestone and dolomite, similar to the younger Bonny Canyon member (Psb). A generally more thickly bedded and massive unit than the Psb, the Rio Bonito is characterized by 5-50 cm-thick beds. This unit occurs on slopes and lower ridgetops in the eastern part of the map area, as well as in canyon bottoms on the western part of the quadrangle where no Yeso is exposed. Near the base of the Rio Bonito member occur lenses of fine-medium grained rusty quartz arenite sandstone, believed to be equivalent to the Glorieta sandstone (Kelly, 1978). The Glorieta sandstone is not entirely continuous, but it can generally be found along strike within 500 feet of where it pinches out. As this is the only documented and recognized non-carbonate lithology within the San Andres formation, it was generally utilized to map the contact between San Andres and carbonate-bearing Yeso formation. The Glorieta sandstone commonly occurs 60-120 feet above the base of the San Andres formation (Pray, 1961). As little or no outcrop occurs in much of the map area, the location of this contact was generally estimated relative to the highest float blocks of Glorieta sandstone. The Rio Bonito member thickens to the south, and in the Mayhill area it is approximately 400 feet thick (Kelley, 1978).

Psb: Bonney Canyon member of the Permian San Andres Formation

A gray to brownish gray locally fossiliferous micritic limestone and dolomite, the Bonney Canyon member of the San Andres formation is characterized by generally 2-20 cm-thick bedding. This is in contrast to the more massive Rio Bonito member. Fauna include crinoids and ammonites. As no distinct stratigraphically recognizable marker bed indicates the Bonney Canyon – Rio Bonito contact, mapping of this contact was primarily done by aerial photo analysis. Kelly (1978) suggests that the thinner bedding of the Bonney Canyon results in a greater permeability and thus greater tree cover in areas dominated by pinyon and juniper forest. As a result, in the map area this member shows a distinct bulls-eye pattern of tree cover that follows the outcrop of local beds. In general, the transition from the Rio Bonito member to the Bonney Canyon member was mapped as a light band just below the start of this bulls-eye pattern of denser tree cover. The Bonny Canyon member is nowhere completely exposed on the Mayhill Quadrangle, yet its thickness in the area is estimated at ~300 feet (Kelley, 1978).

Cenozoic Surficial Deposits

Qal: Quaternary Alluvium

Holocene and older stream and minor terrace deposits. This unit fills valley floors and is characterized as a sandy gravel composed of mainly carbonate clasts and minor quartz sandstone (Glorieta).

QTa: Older Alluvium

Terrace and alluvial fan deposits. This unit occurs mainly at the mouths of smaller side canyons where they run into James Canyon and the Rio Penasco valley. Composed of fine to coarse subrounded carbonate pebbles, most with calcic rinds, in a reddish silty sand matrix. Layers often alternate between more fine and more coarse, and commonly show clast imbrication. QTa is moderately consolidated and generally at a higher level than Qal.

QTdf: Debris Flow Deposit

Minor debris flow deposit in Browning canyon. A moderately to well consolidated matrix supported sandy gravel along the walls of Browning canyon. This unit is poorly exposed and recently incised. Clasts are subrounded carbonates