

Area 3

**Northeast Uvalde Area and
Edwards Aquifer Recharge Zone, South-Central Texas**

Blanco Lake, Circle Bluff, Concan, Knippa, Magers Crossing, Rio Frio,
Sabinal Canyon, Trio, Utopia, and Vanderpool Quadrangles, Texas

(scale 1:24,000)

QUATERNARY

Qal—Alluvium. Unconsolidated gravel, sand, silt, and clay along streams and rivers; inundated regularly. Gravel is mostly limestone and chert. Along minor drainages includes undivided low terrace deposits. Includes some local bedrock outcrops that are undivided.

Qt—Terrace deposits. Unconsolidated gravel, sand, silt, and clay along streams and rivers. Mostly above flood level. Deposits of adjacent terraces at different elevations are mapped separately.

Qu—Undivided terrace, slope-wash, and fan deposits. Gravel to mud.

Ql—Landslide deposits.

Qle—Leona Formation. Fine calcareous silt grading down into coarse gravel.

QUATERNARY TO TERTIARY

QTu—Uvalde gravel (older alluvium). Gravel and sand, some mud; well-rounded pebble- to cobble-sized gravel common, few boulders; mostly chert and limestone and some quartz and igneous and metamorphic rock, commonly cemented by caliche. Deposits typically cap topographically high areas. Precise age unknown; approximately late Tertiary to Quaternary. Thickness ranges from several feet of gravel lag to more than 10 ft.

CRETACEOUS

Upper Cretaceous

Ki—Intrusive igneous rocks. Basalt (field term). Some locations noted by Welder and Reeves (1964) not well exposed.

Ki+Qal—Undivided Cretaceous igneous rocks and Quaternary alluvium.

Kes—Escondido Formation. Mudstone, siltstone, sandstone, and silty limestone. Includes thin (to ~30 ft), lower marl and mudstone unit, Corsicana marl. Outcrops are not common. Escondido thickness ranges between 550 and 900 ft.

Kan—Anacacho Formation. Limestone and marl. Grain-rich limestone common. Light-gray to white, thin to thick bedded, glauconitic, and contains fossil fragments. Thickness ranges from 240 to 500 ft.

Kau—Austin Group. Chalk, marl, and limestone. Light-gray to white, thin to thick bedded, massive to slightly nodular. Chalk mostly microgranular calcite, along with minor foraminifera tests; abundant *Inoceramus* prisms. Chalk forms ledges and alternates with marl and locally bentonitic seams. Sparsely glauconitic pyrite nodules partly weathered to limonite are common. Thick caliche on most outcrops. Thick black soil, along with juniper and live oak in low-relief areas. Locally highly fossiliferous, containing pelecypods, echinoids, ostracodes, and forams. Thickness 135 to 200 ft.

Kef+Kau—Undivided Eagle Ford Formation and Austin Group.

Kef—Eagle Ford Formation. Shale, siltstone, and limestone. Upper part limestone and shale. Shale dark-gray. Limestone light-yellowish-brown, flaggy, in beds as much as 4 ft thick. Lower part siltstone and very fine grained sandstone, light-yellow to gray, laminated, flaggy, some limestone, silty, medium-brown, laminated. Flat to gently rolling topography. Covered with dark-brown soil on slopes; outcrops are rare. Strata at slope break of Eagle Ford/Buda contact commonly fossiliferous, containing oysters, ostracodes, forams, fish bones and teeth, and *Inoceramus*. Thickness 15 to 30 ft.

Kbu+Kef—Buda and Eagle Ford Formations.

Kbu—Buda Formation. Limestone. Hard and dense to chalky, poorly bedded to nodular, glauconitic, fossiliferous, abundant broken shell fragments locally. Light-gray to pale-orange; weathers dark-gray to brown. Thinner bedded and argillaceous near upper contact. Lower part is soft, chalky limestone. Upper contact is disconformable, sharp, and conspicuous. Forms resistant cap on hills. Weathers to form thin, red-brown soil containing rounded cobbles of limestone. Less glauconitic and less iron oxide stained than Georgetown Formation. More fossil gastropods than Austin Group. Burrows filled with chalky marl. Abundant pelecypods, forams, ostracodes, serpulids, echinoid spines, and bryozoans. Locally, solitary corals and green algae. Thickness 40 to 65 ft.

Kdr—Del Rio Formation. Clay. Gypsiferous, calcareous, pyrite common, poorly indurated, plastic, dark-gray to olive-brown. Becomes less calcareous and more gypsiferous upward; blocky, medium-gray, weathers light-gray to yellowish-gray. Some thin lenticular beds of highly calcareous siltstone. Slope forming or underhanging where slumped below overlying Buda. Forms highly expansive soil. Water tanks for livestock commonly excavated on outcrops. Upper and lower contacts gradational. Marine megafossils include abundant *Hyamatogyra arietina* (formerly *Exogyra arietina*) and other pelecypods. Thickness 15 to 50 ft.

Lower Cretaceous

Edwards Group Platform Facies

Ks—Segovia Formation. The Segovia Formation, the upper unit of the Edwards Group in the eastern Edwards Plateau, is approximately equivalent to the Person Formation of the Balcones Fault Zone area of the San Marcos Platform and the upper Devils River Formation of the platform margin. Limestone, dolomitic limestone, and marl. Chert. Only minor outcrop areas in northwest part of map area. West of map area as much as 360 ft thick.

Kft—Fort Terrett Formation. The Fort Terrett Formation, the lower unit of the Edwards Group in the eastern Edwards Plateau, is approximately equivalent to the Kainer and Walnut Formations of the Balcones Fault Zone area of the San Marcos Platform and the lower Devils River Formation of the platform margin. Lateral lithologic changes between Kainer and Fort Terrett deposits are gradational and related to minor facies changes. Limestone, dolomitic limestone, and marl. Shallow subtidal to tidal-flat cycles. Chert. Upper part contains some leached evaporitic rocks and breccias. Lower 20 to 40 ft is subtidal limestone that is approximately equivalent to the Walnut Formation (Kw) of the Balcones Fault Zone area of the San Marcos Platform.

Edwards Group Platform Margin Facies

Kdvru—upper Devils River Formation. The upper Devils River Formation is the upper part of the Edwards Group along the San Marcos Platform margin. It is approximately equivalent to the Person Formation of the Balcones Fault Zone outcrop belt of the San Marcos Platform and the Segovia Formation of the Edwards Plateau. Limestone, dolomitic limestone, dolomite, lesser argillaceous limestone. Shallow subtidal to tidal-flat cycles. Chert. Some rudistid mounds. Thickness 200 to 250 ft.

Kdvrl—lower Devils River Formation. The lower Devils River Formation is the upper part of the Edwards Group at the San Marcos Platform margin. It is approximately equivalent to the Kainer Formation of the Balcones Fault Zone outcrop belt of the San Marcos Platform and the Fort Terrett Formation of the Edwards Plateau. Limestone, dolomitic limestone, dolomite, and lesser argillaceous limestone. Shallow subtidal to tidal-flat cycles. Chert. Upper part contains some leached evaporitic rocks and breccias. Lower 20 to 50 ft is nodular limestone. Thickness 350 to 400 ft.

Kdvr—Devils River Formation, undivided.

Edwards Group Basin Facies

Ksa—Salmon Peak Formation. Limestone and minor argillaceous limestone. Fossiliferous; chert. Between 200 and 250 ft thick at southwest part of study area; approximately 280 ft beyond study area.

Ksa+Qal—Undivided Cretaceous Salmon Peak Formation and Quaternary alluvium.

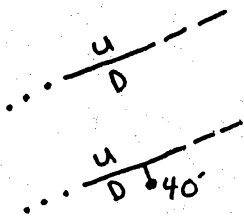
Kdvr+Ksa—Undivided Devils River and Salmon Peak Formations. Units interfinger.

Kmk—McKnight Formation. Limestone, argillaceous limestone, shale. Chert, solution zones, breccia. Approximately 150 ft thick.

Kdvr+Kmk+Ksa—Undivided Devils River, McKnight, and Salmon Peak Formations. McKnight and Salmon Peak strata (basin facies) interfinger with Devils River strata (platform margin facies).

Kgru—upper Glen Rose Formation. Limestone, dolomitic limestone, argillaceous limestone, marl, and some dolomite. Shallow subtidal to tidal-flat cycles. Alternating resistant and recessive beds forming stair-step topography; limestone, wackestone, packstone, grainstone, hard to soft and marly; 3- to 10-ft-thick, upward-shoaling cycles common, light-gray to yellowish-gray; dolomite, fine grained, porous, yellowish-brown; locally burrowed; local honeycomb porosity; marine megafossils include molluscan steinkerns, rudistids, oysters, and echinoids; local dinosaur tracks; thickness about 400 ft. Thickness of entire Glen Rose Formation about 650 ft.

Map Symbols



Fault; **U**, upthrown side; **D**, downthrown side; dashed where relatively less distinct than solid; dotted where covered. Bar and number on downthrown side of some faults cutting undivided Kdvr strata indicate approximate throw.



Doline. Probable karst-related collapse or subsidence of bedrock.



Strike and dip of beds dipping between 2° and 6°



Strike and dip of beds dipping between 4° and 10°.



Approximate boundary of interfingering platform and platform-margin facies.

Nomenclature boundary.

Unit contacts drawn as solid lines are relatively more distinct in the field and on aerial photographs than those drawn by dashed lines.