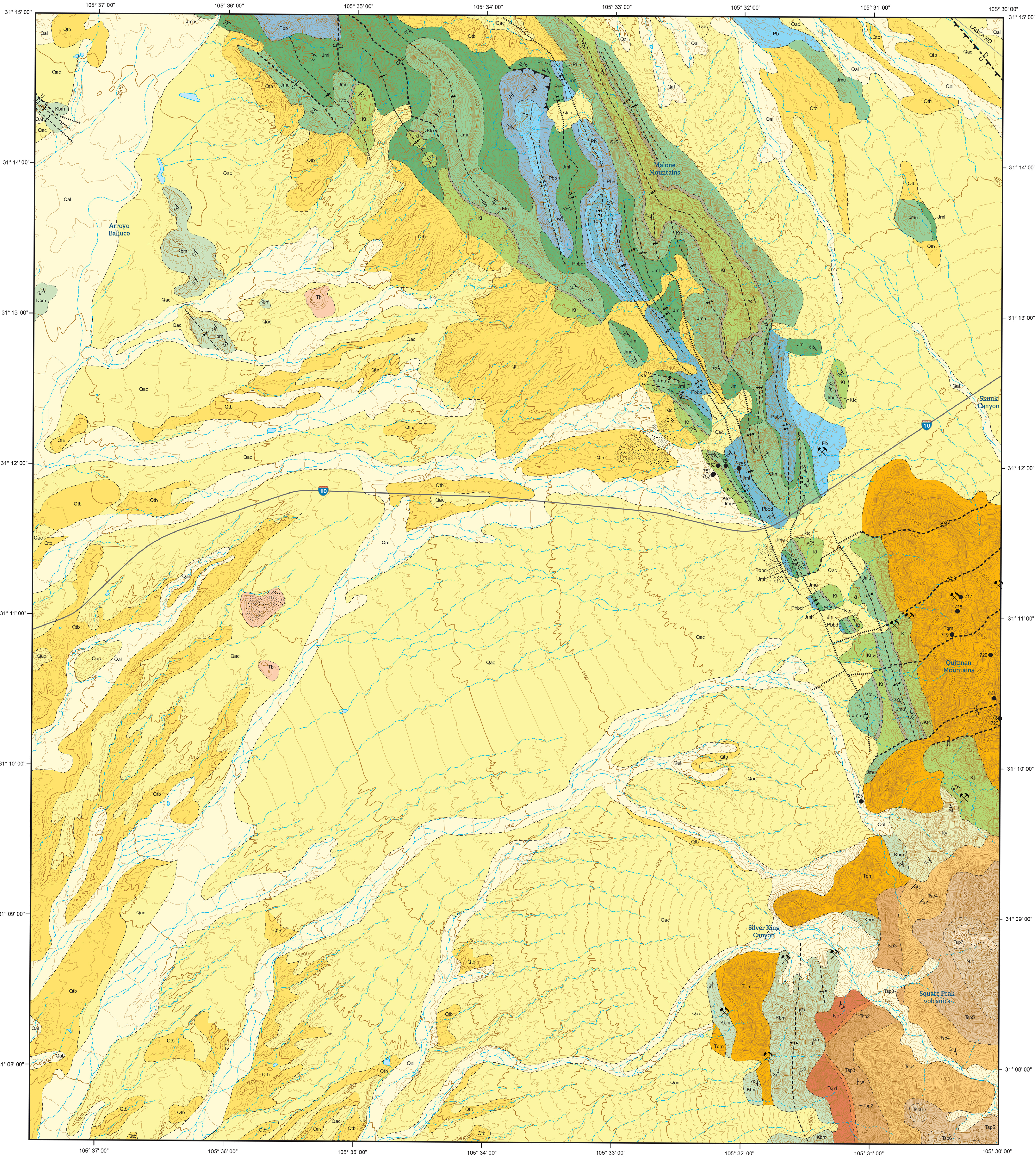


In cooperation with the STATEMAP component of the U.S. Geological Survey National Cooperative Geologic Mapping Program

GEOLOGIC MAP OF THE
SILVER KING CANYON QUADRANGLE, TEXAS
OPEN-FILE MAP OFM0222

DESCRIPTION OF GEOLOGIC MAP UNITS

This map shows the distribution of geologic units west-southwest of the town of Sierra Blanca, across Interstate Highway 10 in the Silver King Canyon Quadrangle. Geologic units were mapped, and structural elements were measured in the field; where bedrock units are covered by surficial units and vegetation, or access is limited, units were interpreted using soil data, well-drilling records, previous mapping, and surveys.



BEDROCK UNITS

QUATERNARY	Qal	Qal—Alluvium: River and stream floodplain deposits, silty sand, mud, channel gravel, rounded pebbles, and cobbles.
	Qac	Qac—Undivided alluvium and colluvium: Angular bedrock fragments, gravel, silt, sand, and clay; increasing amounts of igneous material around Tertiary intrusive units. These deposits are mostly above flood level across the desert plain, except along the river and stream channels prone to flash floods. Fluvial characteristics, such as point bars, oxbows, and abandoned channel segments, are well-preserved.
	Qtb	Qtb—Bolson deposits: Clay, silt, sandstone, and conglomerate terrace gravels. Finer-grained material found in the central areas, coarsening to pebbles and boulder conglomerates on the outer edge(s).
	Tb	Tb—Basalt: Conical hills of basalt extruding onto the alluvial fill. The basalt is amygdaloidal, gray to dark gray, fine-grained to slightly porphyritic with phenocrysts of olivine, altered to iddingsite, in a matrix of labradorite plagioclase lathes. Amygdules are quartz and calcite with calcite concentrated toward the center. The basalt has been dated (K-Ar) at 29.4±1.1 and 34.1±0.7 by Henry and others (1986).
TERTIARY	Tqm	Tqm—Quitman Mountain monzonite: Massive, gray to pink, slightly porphyritic, with megacrysts of alkali-feldspar, and compositions ranging from monzonite, quartz monzonite (~80%), granite and syenite to alkali feldspar syenite. Phases are gradational and presumed to be formed through internal differentiation process, as opposed to separate intrusive phases. Late-stage apite and apite porphyry phases occasionally occur as dikes, and apophyses occur along the flanks of the intrusion.
	Tsp7	Square Peak volcanics: Thick, lithic, ash-flow tuffs, irregularly layered and differentially compacted though laterally continuous with various degrees of welding. Columnar jointing is crude and pervasive, with lateral separations of at least five different flows. The volcanics are light gray to black, slightly porphyritic, with phenocrysts of alkali feldspar and quartz, occasionally sanadine and plagioclase, and compositions range from trachyte and quartz trachyte to rhyolite. Tsp7—Quitman Peak tuff, welded crystal vitric tuff.
	Tsp6	Tsp6—Love lithic tuff, densely welded lithic crystal tuff. Tsp5—Square Peak purple tuff, welded vitric crystal tuff. Tsp4—Peace hornblende tuff, hornblende tuff, welded crystal vitric tuff. Tsp3—Cowan tuff, welded crystal vitric tuff. Tsp2—Bug Hill tuff, non-welded lithic crystal tuff. Tsp1—Double Canyon tuff, welded vitric tuff.
	Tsp5	
CRETACEOUS	Kbm	Kbm—Bluff Mesa limestone: Thick beds of gray to tan, sandy, fossiliferous limestone, with thin interbeds of sandstone, siltstone, and shale. The limestone is often fragmented and sandy, with ubiquitous shell fragments and coarse quartz grains.
	Ky	Ky—Yucca Formation: Thick, massive beds of gray limestone with thin interbeds of shale and sandstone. Sandstone and limestone are metamorphosed beige, pink, and white quartzite and green garnetiferous skarn at Zimmler pass between, and in contact with, the Square Peak volcanics and the Quitman Mountain monzonite. Hydrothermal alteration has produced zones of hematite and quartz in the skarn region.
	Kt	Torcer Formation: Kt—predominantly dense, gray to black, weathered buff to gray, locally pebbly, 125-150 m thick limestone with minor amounts of interbedded shale, and a consistent 10-15 m thick interbed of quartzitic sandstone and conglomerate; Ktc—interbedded, gradational, brown to reddish-tan, calcareous sandstone to quartzitic sandstone and siliceous conglomerate with well-rounded white, gray, tan, and brown, 0.5-1.5 cm quartz (80%) and chert (20%) pebbles.
	Ktc	
JURASSIC	Jmu	Malone Formation: Jmu—black to gray, weathering brown to gray, 100-150 m thick with 1-3 m beds of arenaceous limestone and thin interbeds of shale, siltstone and indurated calcareous sandstone. Jml—the lower Malone Formation is 75-100 m thick, thinly bedded, clastic, calcareous sandstone and siltstone with thin interbeds of limestone, shale, and limestone conglomerate. Sandstone and siltstone is commonly gray to brown, finely laminated or cross-laminated, and range from very fine-grained to very coarse-grained. Chert and limestone lithic fragments are typically rounded and similar in size to sand grains and become more common in coarser-grained beds.
	Jml	
PERMIAN	Pb	Briggs Formation: Pb—thick, 175-200 m, interbedded limestone, gypsum (50-75%) and dolomite, forming valley floors and shallow hill slopes. Pbb—the buff dolomite member is interbedded dolomite, limestone, and gypsum, 60-75 m thick, predominantly tan to gray, fine-grained, silty, calcitic dolomite, with occasional chert nodules. Pbbd—the black dolomite member is gray to black, fine-grained, and commonly brecciated, with stylolitic calcite veinlets. The black dolomite member has thin interbeds of brown to gray micro-crystalline limestone and gradational fine-grained, calcareous sandstone interbeds.
	Pbb	
	Pbbd	

MAP SYMBOLS

QUARRY/SAND-PIT AREA	NORMAL FAULT—Showing sense of motion. U, upthrown block; D, downthrown block.
BODY OF WATER	GEOCHEMICAL SAMPLE LOCALITY—Location of sample taken for analytical work.
INTERMITTENT STREAM/CREEK	LEFT LATERAL FAULT
HIGHWAY	THRUST FAULT—Teeth showing the direction of the underlying plate
NORMAL FAULT (inferred)	ANTICLINE
NORMAL FAULT (concealed)	OVERTURNED ANTICLINE
MINE/PROSPECT	SYNCLINE
BEDDING—Sedimentary bedding plane showing strike and dip.	OVERTURNED SYNCLINE
OVERTURNED BEDDING—Showing strike and dip angle of beds	JOINT—Location of jointed surface, showing strike and dip

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