

DESCRIPTION OF GEOLOGIC MAP UNITS

This map is constructed for the study of sand resources in the region. The map shows the distribution of geologic units southeast of the town of Brady, in the Central Texas sand district around the town of Voca, in the Spice Rock quadrangle. Geologic units were mapped, and structural measurements were taken in the field; where bedrock units are covered by surficial units and vegetation, or access is limited, units were interpreted using aerial imagery, soil data, well-drilling records, and previous mapping.

BEDROCK UNITS

QUATERNARY	Qal	Qal—Alluvium: River and stream floodplain deposits, silty sand, mud, channel gravel, rounded pebbles, and cobbles.
	Qt	Qt—Fluvialite terrace deposits: Gravel, silt, sand, and clay; increasing amounts of granite grus and sand around the Town Mountain Granite and Hickory sand formations. These deposits are mostly flood level along entrenched streams and accumulations of granite grus in low-lying drainage areas. Fluvialite characteristics such as point bars, oxbows, and abandoned-channel segments are well preserved.
CRETACEOUS	Ked	Ked—Edwards Limestone: Fine-grained, argillaceous, locally siliceous, thin-bedded to nodular and massive, light-gray to light-brown limestone with marine miliolid, gastropod, and rudistid fossils. Some dolomite and chert nodules are present, with a total unit thickness between 10 and 40 m.
	Kh	Kh—Hensell Sand: Fine- to very fine-grained, tan-yellow, orange and red, locally coarse-grained, argillaceous, massive, locally cross-bedded and ripple-marked sandstone. Sandstone contains interbeds of sandy, silty, calcareous claystone and sandy, calciche-cemented conglomerate with pebbles of chert and quartz, and basal granite grus gravel.
ORDOVICIAN	Ottc	Ottc—Staendebach Member Limestone: Fine- to medium-grained, light-gray to brown-gray, thick- to thin-bedded limestone.
	Ottm	Ottm—Dolomitic Limestone: Locally cherty and grading westward into predominantly limestone, with gastropod, cephalopod, and trilobite fossils preserved in cherty areas. Thickness is about 200 m, thinning westward.
CAMBRIAN	Ews	Ews—San Saba Member (undivided): Thick- to thin-bedded, occasionally cherty or glauconitic, fine- to very fine-grained, gray to dark-gray limestone and dolomite. Thickness is about 100 m, becoming more granular and limestone-dominant westward.
	Ewpp	Ewpp—Point Peak Member: Thinly bedded, gray to brown-gray siltstone containing abundant authigenic feldspar with interbeds of fine-grained stromatolitic limestone; intraformational conglomerate; and thin, silty, gray-green shale beds. Thickness is about 40 m, thinning westward.
	Ewm	Ewm—Morgan Creek Limestone Member: Granular, glauconitic, thick- to thin-bedded, brown limestone with thin interbeds of siltstone. Fossils include trilobites, calcareous brachiopods, and aphanitic stromatolite in upper sections. Thickness is about 30 to 40 m.
	Erc	Erc—Cap Mountain Limestone Member: Granular, thick-bedded, occasionally glauconitic or oolitic, green-gray to yellow-brown limestone grading to calcareous sandstone and siltstone at the base. Limestone is about 50 to 75 m thick and thins northward.
	Erh	Erh—Hickory Sandstone Member: Upper: medium- to coarse-grained, exceptionally well-rounded, hematite-cemented, orange and red to red-brown, <10-m-thick sandstone; Middle: fine- to medium-grained argillaceous, silty, thin-bedded, orange to red, crossbedded, <30-m-thick sandstone; Lower: forming most of the Hickory sandstone in the map area, fine- to coarse-grained, poorly sorted, yellow-gray to yellow, cross-bedded, 30 to 80-m-thick sandstone with coarse sand and gravel base in contact with nonconformable Precambrian rocks.
PROTEROZOIC	Eps	Eps—Packsaddle Schist: Alternating layers of hornblende-bearing biotite schist and quartz-feldspar-mica schist, with prevalent pygmatic leucosomes and recumbent folding. Quartz veins and leucocratic fine-grained quartz-feldspar layers are common and form migmatization.
	Elc	Elc—Lost Creek Gneiss: Fine- to medium-grained, two-mica augen gneiss, with biotite-rich melanocratic bands and quartz-feldspar leucocratic bands. The augen gneiss is distinct from the underlying Valley Spring Gneiss and grades upward into the Packsaddle Schist (pps).
	Evs	Evs—Valley Spring Gneiss: Fine- to medium-grained, well-foliated, heterogenous, pink to gray, alkali-feldspar augen gneiss, occasionally containing coarse microcline feldspar pegmatitic lenses and local biotite and/or amphibole schist fragments.

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		BEDDING—Sedimentary bedding plane showing strike and dip.
	HIGHWAY		DIKE—Dike orientation showing strike and dip
	ROAD/STREET		FOLIATION—Foliation plane showing strike and dip
	NORMAL FAULT (concealed)		NORMAL FAULT—Fault plane orientation showing strike and dip
	NORMAL FAULT (inferred)		

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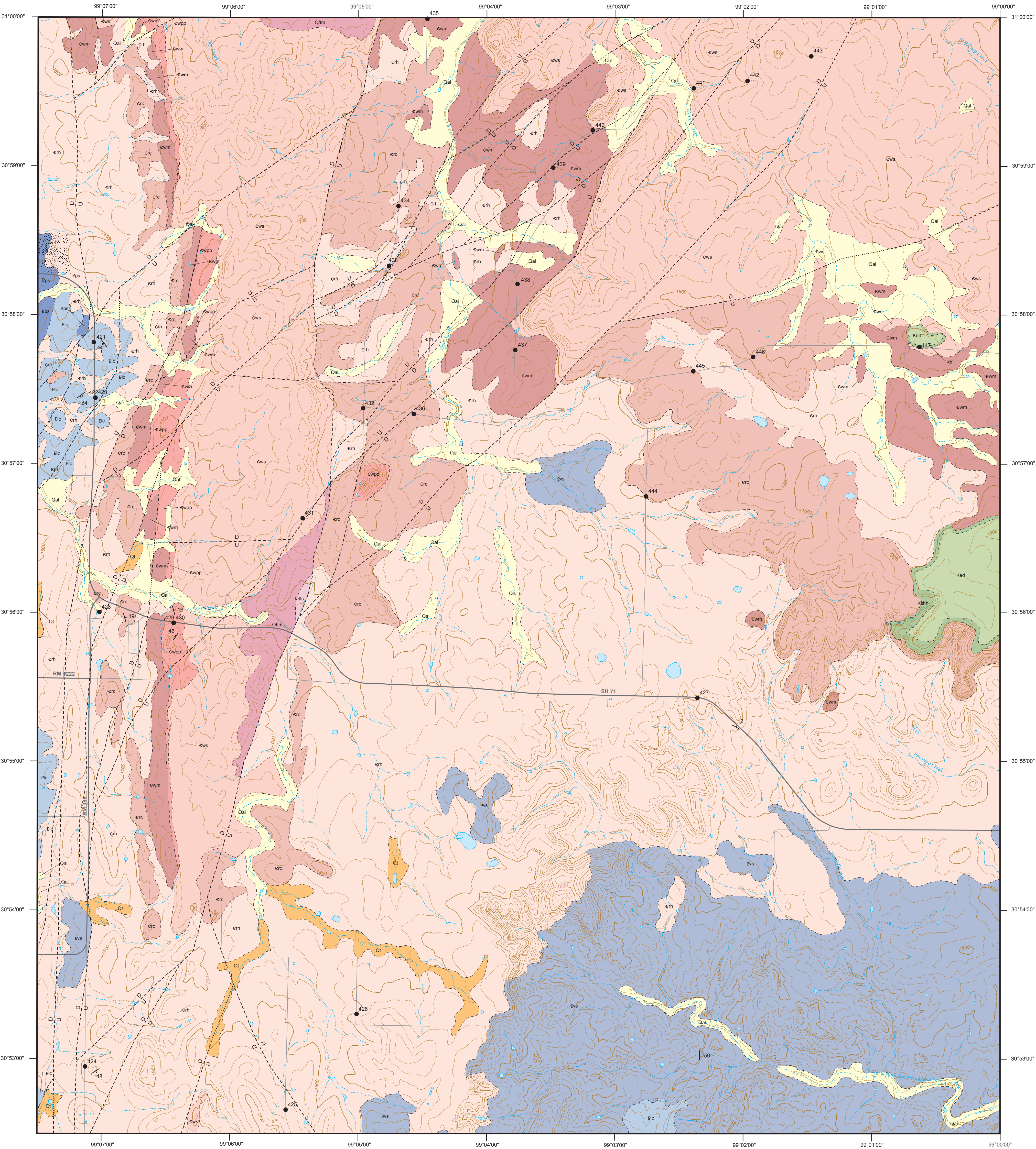
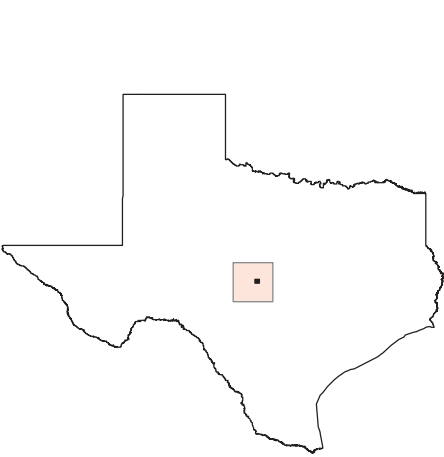
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APPROXIMATE MEAN
DECLINATION, 2016

1 1/2 0 1 MILE 1 .5 0 1 KILOMETER

SCALE 1:24,000

UNIVERSAL TRANSVERSE MERCATOR PROJECTION, ZONE 14N, NAD 83
CONTOUR INTERVAL 20 FT
DATUM IS MEAN SEA LEVEL

GEOLOGIC MAP OF THE FREDONIA QUADRANGLE, TEXAS

Brent A. Elliott

2016