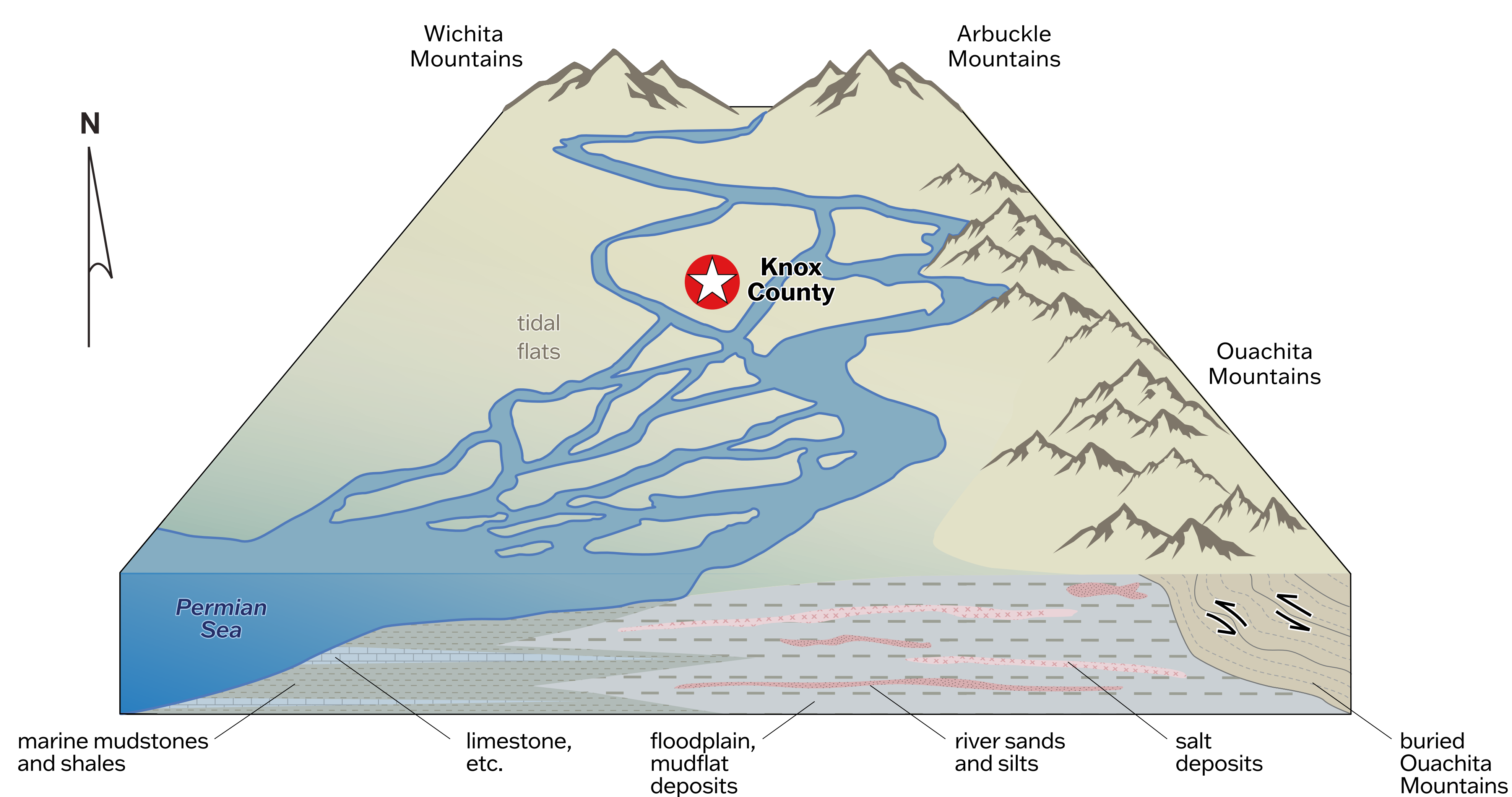


# The Geology of Knox County - What the Rocks Reveal

## From ancient tidal flats to modern rivers.

### A Landscape Formed in Ancient Times

About **280 million years ago**, the environments surrounding the site of this safety rest area (SRA), created the **Clear Fork Formation**. That landscape looked very different from what we see today. To the east and northeast, in what is now Oklahoma, the ancestral **Wichita, Arbuckle, and Ouachita Mountains** stood tall. Rivers flowing from these highlands drained westward toward the **Permian Sea**. At that time, Knox County was primarily a **tidal flat**. Salt deposits layered within fine-grained sediments indicate arid conditions with high heat and strong evaporation.

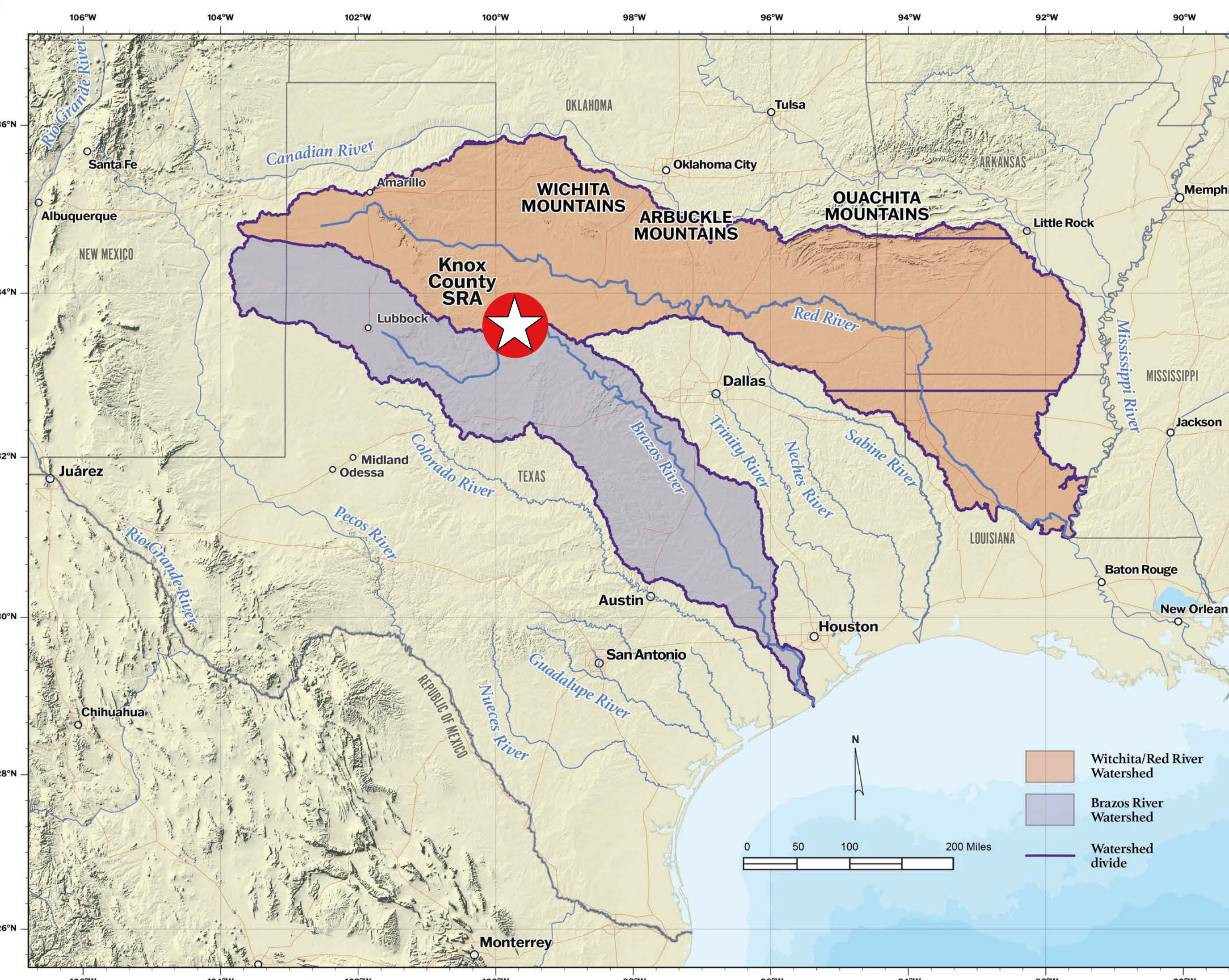


**Ancient Paleoenvironment of the Clear Fork Formation, Knox County.**

### Today - Where Rivers Meet

Today, Knox County is part of the red-bed Plains of North Texas. Rivers have cut these plains into gently rolling terrain and this rest area sits on the watershed divide between two major river drainage networks:

- The **Red River Watershed** where the Wichita River flows into the Red River, that feeds the Mississippi River, which then flows to the Gulf.
- The **Brazos River Watershed** from which the Brazos River drains directly into the Gulf.



**Red River and Brazos River watersheds.**

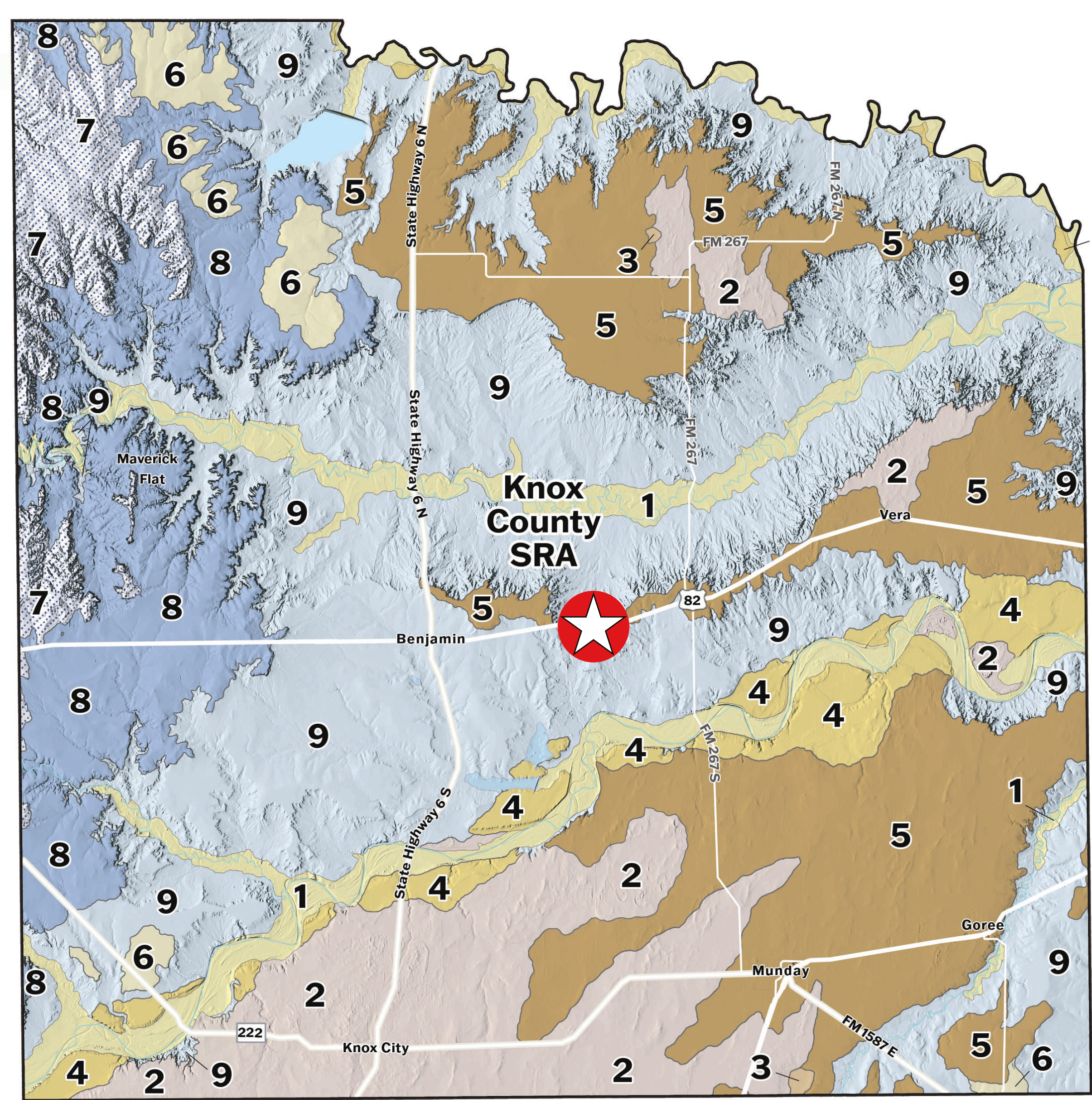


#### Seymour Aquifer

An aquifer is subsurface rock or soil that can hold and yield water. The Seymour Aquifer is an important Texas aquifer in Knox County and extends across north central Texas. Water quality in this aquifer ranges from fresh to slightly saline, and almost all of the water pumped from this groundwater source is used for irrigation.

### Geologic Map of Knox County

Numbers indicate location of each rock unit



### Geologic Age

Shown in millions of years



- 1** Stream valley deposits. Composed of clay, sand, silt, and gravel.
- 2** Dune sand. Mostly sand-sized sediments deposited by wind.
- 3** Playa deposits. Salty deposits formed in shallow temporary lakes that form in flat, closed depressions.
- 4** High remnants of stream and floodplain deposits (clay, sand, silt, and gravel).
- 5** Seymour Formation. Sediment deposited by rivers, floodplains, or fans at the base of slopes; bedrock reservoir for the **Seymour Aquifer**.
- 6** High-standing soil and eroded, weathered rocks.

- 7** Blaine Formation. Mostly mudstone, interbedded with other sedimentary rocks. The rock formation for the **Blaine Aquifer**.
- 8** San Angelo Formation. Sandstone and mudstone (shale and siltstone).
- 9** Clear Fork Group. Fine-grained sedimentary rocks including mudstones, shale, and siltstones with lesser limestone and salt deposits.

### Geologic Rock Units

Description of each rock unit

### Major Geologic Events

What happened during this time

#### Pleistocene (Ice Age) 2.5 million years ago to 11,700 years ago

- Period of time of the most recent ice age.

#### Unconformity

A gap in the rock record of about 260 million years where scant new rock was deposited, or earlier layers may have been eroded away.

#### Permian Period

- Marine shorelands accumulate shales and sands.
- Shallow water bodies evaporate precipitated salt.
- Dimetrodon and Seymouria fossils discovered in this area.

### Did You Know?

More than 99 percent of all life on Earth is now extinct. Most died out during five major extinction events. Of these, the most catastrophic occurred 251 million years ago, at the end of the Permian Period. Known as the **Great Dying**, this event wiped out 96 percent of all species.



#### Dimetrodon

An extinct mammal-like reptile which lived in the Permian Period.