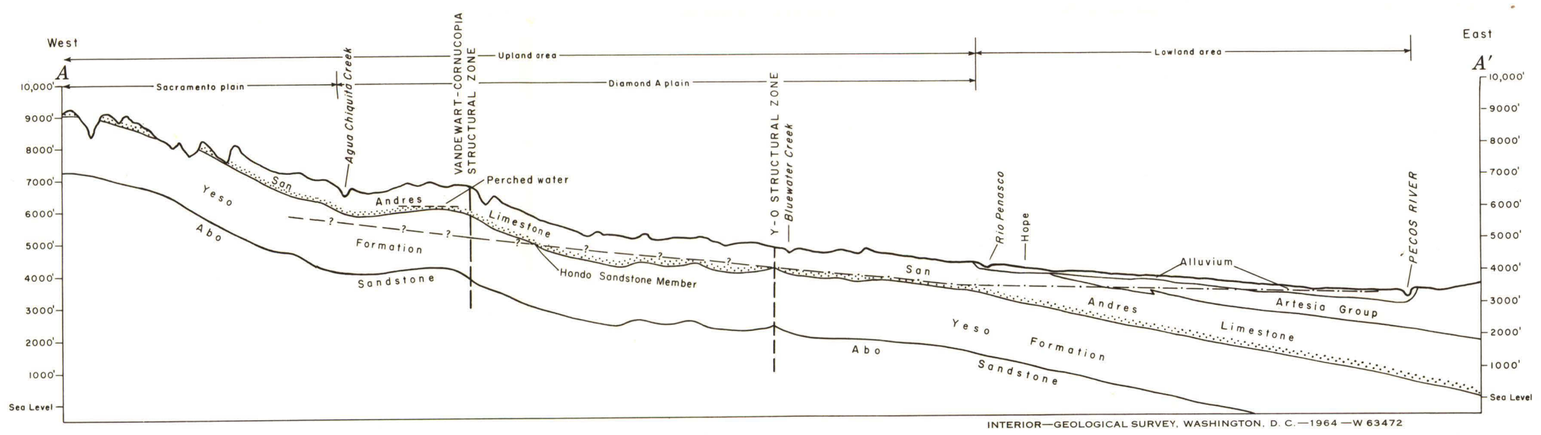
UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Base by Army Map Service, 1958.

Geology modified by W. S. Motts from Dane and Bachman (1958)



INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D. C.—1964—W 63472

GENERALIZED GEOLOGIC MAP AND SECTION OF PART OF THE ROSWELL BASIN, NEW MEXICO

SCALE 1:500 000

10 0 10 20 30 40 50 MILES

10 0 10 20 30 40 50 KILOMETERS

EXPLANATION

Qal — Alluvium
Gravel, sand, and silt averages about 150 feet thick in Pecos River lowland, but is relatively thin in upland area. Yields large quantities of water to wells in lowland area. Poorly permeable to infiltrating surface water because of caliche in B horizon of soil. Artificial recharge potential good through recharge wells

Qb — Bolson deposits, dune sand, and other surficial deposits

QTa — Alluvium and caliche
Thin gravel, sand, silt, and caliche in upland area. May include some redeposited material from Ogallala Formation. Not water bearing in area. Artificial recharge potential negligible

Te, Ti — Extrusive and intrusive rocks
Extrusive rocks, Te; intrusive rocks, Ti. Artificial recharge potential negligible

TKr — Conglomerate, sandstone, siltstone, and shale
Yield small quantities of water to wells. Recharge to these rocks does not reach the Roswell-Artesia sector

Pa — Artesia Formation
Includes rocks equivalent to Tansill, Yates, Seven Rivers, Queen, and Grayburg Formations. Gypsum and anhydrite interbedded with sandstone, siltstone, and thin beds of dolomite. Supplies water to domestic, stock, and a few irrigation wells. Artificial recharge potential good in outcrop area, but poor where overlain by several feet of alluvium

Pq — Queen Formation
Dolomite interbedded with siltstone, sandstone, and gypsum. Yields small amounts of water to wells. Absorbs water readily in outcrop area, but artificial recharge to the formation, in large part, moves from the Roswell basin

Pg — Grayburg Formation
Thickly to thinly bedded dolomite interbedded with siltstone and fine-grained sandstone. Principal aquifer to irrigation wells south of Artesia. Artificial recharge potential good in outcrop area; however, water entering the upper aquifer moves eastward from the Roswell basin

Ps — San Andres Limestone
Thickly to thinly bedded limestone and dolomite interbedded with minor sandstone and siltstone beds in lower part. Yields large quantities of water to irrigation wells and is principal aquifer in the Roswell-Artesia sector. Artificial recharge potential poor in the western part where major drainages cut into Yeso Formation, good through wells tapping the San Andres between R.23 E. and Pecos River, and good through sinkholes and highly permeable sections of stream channels in Rs. 19 to 23 E.; however, most water entering the San Andres moves into Hondo Sandstone Member and Yeso Formation. The Hondo Sandstone Member, the basal unit of the San Andres Limestone, consists of quartzose sandstone and siltstone interbedded with silty limestone, gypsum, and anhydrite. Yields small quantities of water to stock and domestic wells west of R. 21 E. Artificial recharge directly into the Hondo not feasible; most recharge to the formation in Rs. 19 to 23 E. reaches the Hondo

Py — Yeso Formation
Anhydrite and gypsum interbedded with sandstone, siltstone, and thin beds of dolomite. Wells that penetrate the Yeso generally are west of R. 21 E., and most yield less than 10 gpm. Artificial recharge potential on the outcrop area is poor; most of the recharge to the formation is through the San Andres from R. 23 E. westward

Contact
Dashed where gradational or indefinite

Fault
Dashed where approximate

Structural zone
A zone in which joints, faults, or flexures have a similar or parallel trend

Piezometric surface
Queried where position is doubtful

Pleistocene and Recent — QUATERNARY
Pliocene and Pleistocene — TERTIARY AND QUATERNARY
TERTIARY
TRIASSIC CRETACEOUS AND TERTIARY
Guadalupe — Artesia Group — Leonard — PERMIAN