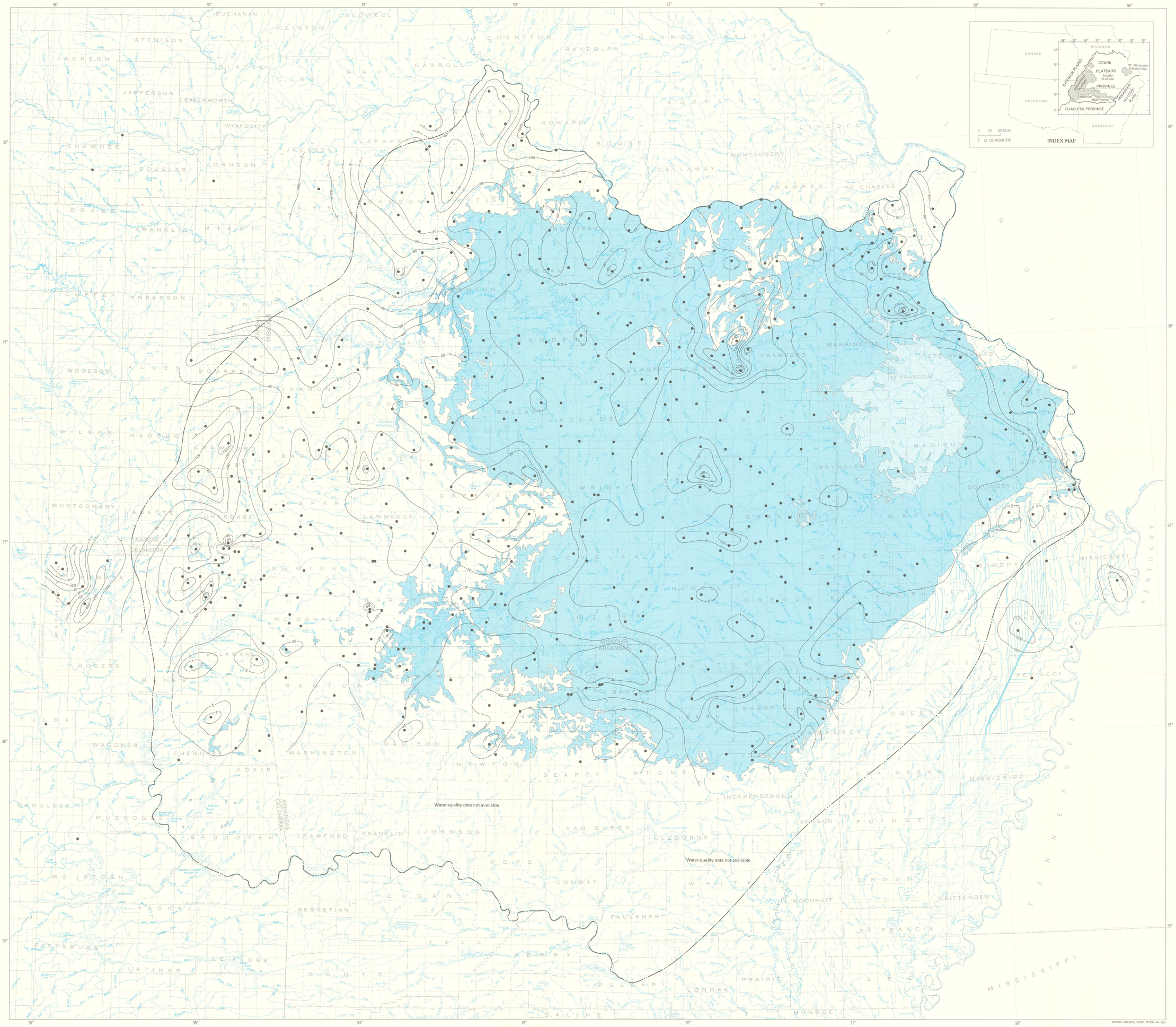
DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

HYDROLOGIC INVESTIGATIONS
ATLAS HA–711–K (SHEET 4 OF 4)



SULFATE

The sulfate concentration in the Ozark aquifer generally is less than 10 mg/L in the Salem Plateau. The main exception occurs in the north-central part of the plateau where the aquifer intermittently is capped by Pennsylvanian shale and sandstone. In this area the sulfate concentration is larger and locally may exceed 140 mg/L. The origin of the sulfate probably is oxidation of pyrite that has been concentrated in sinkholes on the paleokarst surface of the aquifer beneath the Pennsylvanian rocks. Another exception occurs at the extreme northeastern edge of the Salem Plateau where the sulfate concentration exceeds 500 mg/L in samples from one well and 100 mg/L in samples from other wells in a small area. Possible sources of the larger concentration of sulfate in this area are: abandoned surface lead and zinc mines, pyrite disseminated in the aquifer rock matrix, and pyrite deposits in ancient sinkholes. Filled sinkholes are present in the surface of the Ozark aquifer in this area, but any Pennsylvanian overburden that may have once covered the area has been eroded.

The sulfate concentration in the Springfield Plateau, where the Ozark aquifer is confined, generally is less that 20 mg/L. In that part of the aquifer that lies beyond the western boundary of the Ozark Plateaus province (index map), the concentration generally exceeds 20 mg/L.

The U.S. Environmental Protection Agency (1986) recommends 250 mg/L as the maximum concentration of sulfate in domestic water supplies. In addition to causing an unpleasant taste, excessive sulfate concentration has a laxative effect.

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Sulfate concentration

WATER TYPE AND CONCENTRATION OF DISSOLVED SOLIDS, CHLORIDE, AND SULFATE IN WATER FROM THE OZARK AQUIFER IN MISSOURI, ARKANSAS, KANSAS, AND OKLAHOMA

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