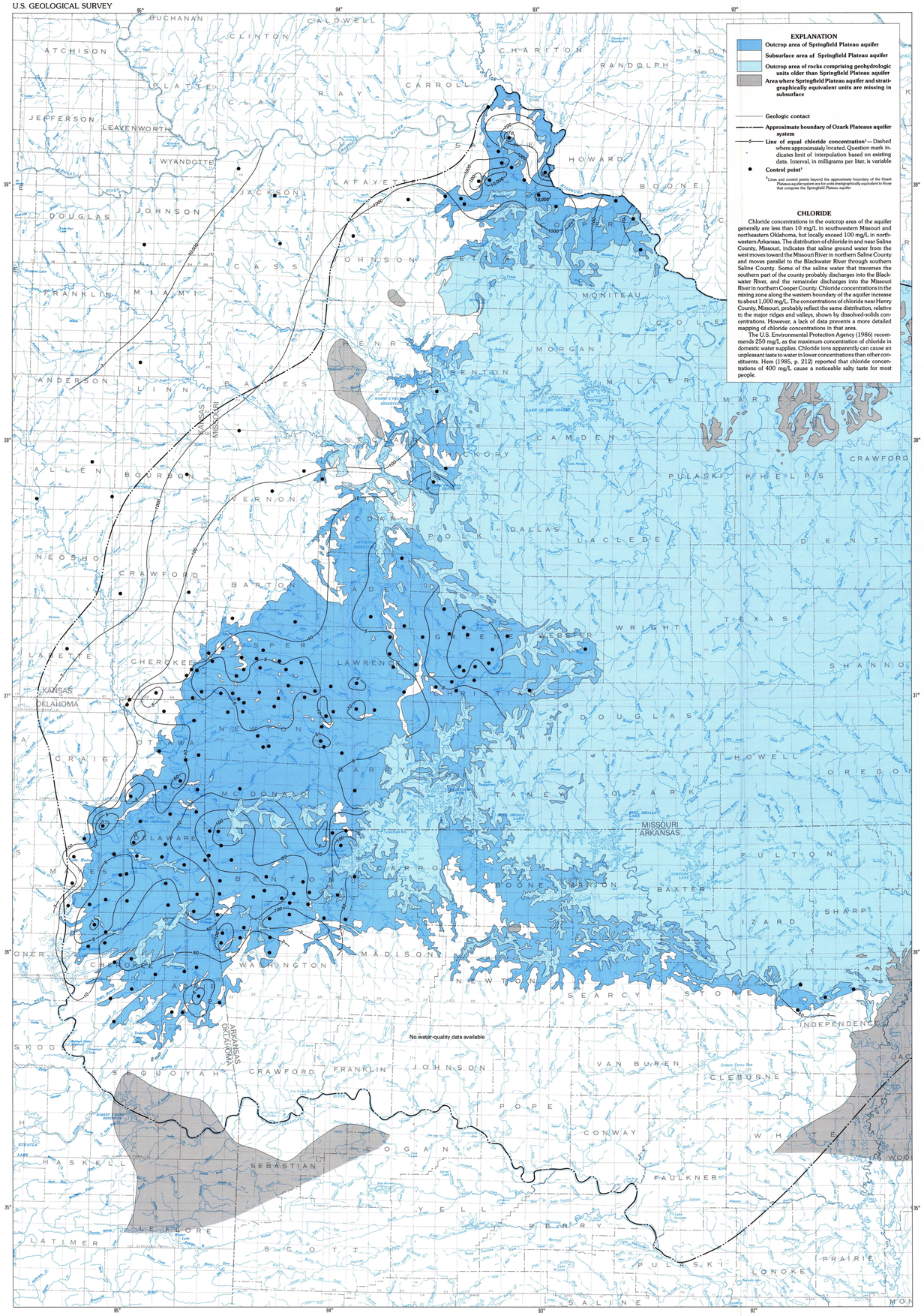
DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

HYDROLOGIC INVESTIGATIONS
ATLAS HA-711-L (SHEET 2 OF 2)



EXPLANATION

- Outcrop area of Springfield Plateau aquifer
- Subsurface area of Springfield Plateau aquifer
- Outcrop area of rocks comprising geohydrologic units older than Springfield Plateau aquifer
- Area where Springfield Plateau aquifer and stratigraphically equivalent units are missing in subsurface
- Geologic contact
- Approximate boundary of Ozark Plateaus aquifer system
- 5 — Line of equal chloride concentration[1] — Dashed where approximately located. Question mark indicates limit of interpolation based on existing data. Interval, in milligrams per liter, is variable
- Control point[1]

[1]Lines and control points beyond the approximate boundary of the Ozark Plateaus aquifer system are for units stratigraphically equivalent to those that comprise the Springfield Plateau aquifer

CHLORIDE

Chloride concentrations in the outcrop area of the aquifer generally are less than 10 mg/L in southwestern Missouri and northeastern Oklahoma, but locally exceed 100 mg/L in northwestern Arkansas. The distribution of chloride in and near Saline County, Missouri, indicates that saline ground water from the west moves toward the Missouri River in northern Saline County and moves parallel to the Blackwater River through southern Saline County. Some of the saline water that traverses the southern part of the county probably discharges into the Blackwater River, and the remainder discharges into the Missouri River in northern Cooper County. Chloride concentrations in the mixing zone along the western boundary of the aquifer increase to about 1,000 mg/L. The concentrations of chloride near Henry County, Missouri, probably reflect the same distribution, relative to the major ridges and valleys, shown by dissolved-solids concentrations. However, a lack of data prevents a more detailed mapping of chloride concentrations in that area.

The U.S. Environmental Protection Agency (1986) recommends 250 mg/L as the maximum concentration of chloride in domestic water supplies. Chloride ions apparently can cause an unpleasant taste to water in lower concentrations than other constituents. Hem (1985, p. 212) reported that chloride concentrations of 400 mg/L cause a noticeable salty taste for most people.

EXPLANATION

- Outcrop area of Springfield Plateau aquifer
- Subsurface area Springfield Plateau aquifer
- Outcrop area of rocks comprising geohydrologic units older than Springfield Plateau aquifer
- Area where Springfield Plateau aquifer and stratigraphically equivalent units are missing in subsurface
- Geologic contact
- Approximate boundary of Ozark Plateaus aquifer system
- 50 — Line of equal sulfate concentration[1] — Dashed where approximately located. Question mark indicates limit of interpolation based on existing data. Interval, in milligrams per liter, is variable
- Control point[1]

[1]Lines and control points beyond the approximate boundary of the Ozark Plateaus aquifer system are for units stratigraphically equivalent to those that comprise the Springfield Plateau aquifer

SULFATE

Sulfate concentrations in ground water from the Springfield Plateau aquifer generally are less than 10 mg/L in the outcrop area. Concentrations larger than 50 mg/L occur near Saline County, Missouri, and in an area that extends along the western boundary of the aquifer from Henry County, Missouri, to Cherokee County, Kansas. Samples from a small area in Mayes County, Oklahoma, contained concentrations that exceeded 100 mg/L. The areas of largest concentrations are located in the Tri-State (Missouri-Kansas-Oklahoma) lead-zinc mining district, where sulfate concentrations in water from eight wells exceed 100 mg/L. Presumably, as gypsum is not present, the larger concentrations of sulfate in this region are the product of the oxidation of sulfide minerals in abandoned mine shafts that refilled with water.

REFERENCES

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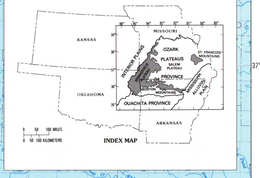
CONVERSION FACTORS

Multiply inch-pound unit	By	To obtain SI unit
foot	0.3048	meter
mile	1.609	kilometer
foot per mile	0.1894	meter per kilometer
foot per second	0.3048	meter per second



Base from U.S. Geological Survey
State base maps, 1:500,000; Arkansas, 1967; Kansas, 1982; Missouri, 1970; Oklahoma, 1972

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

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