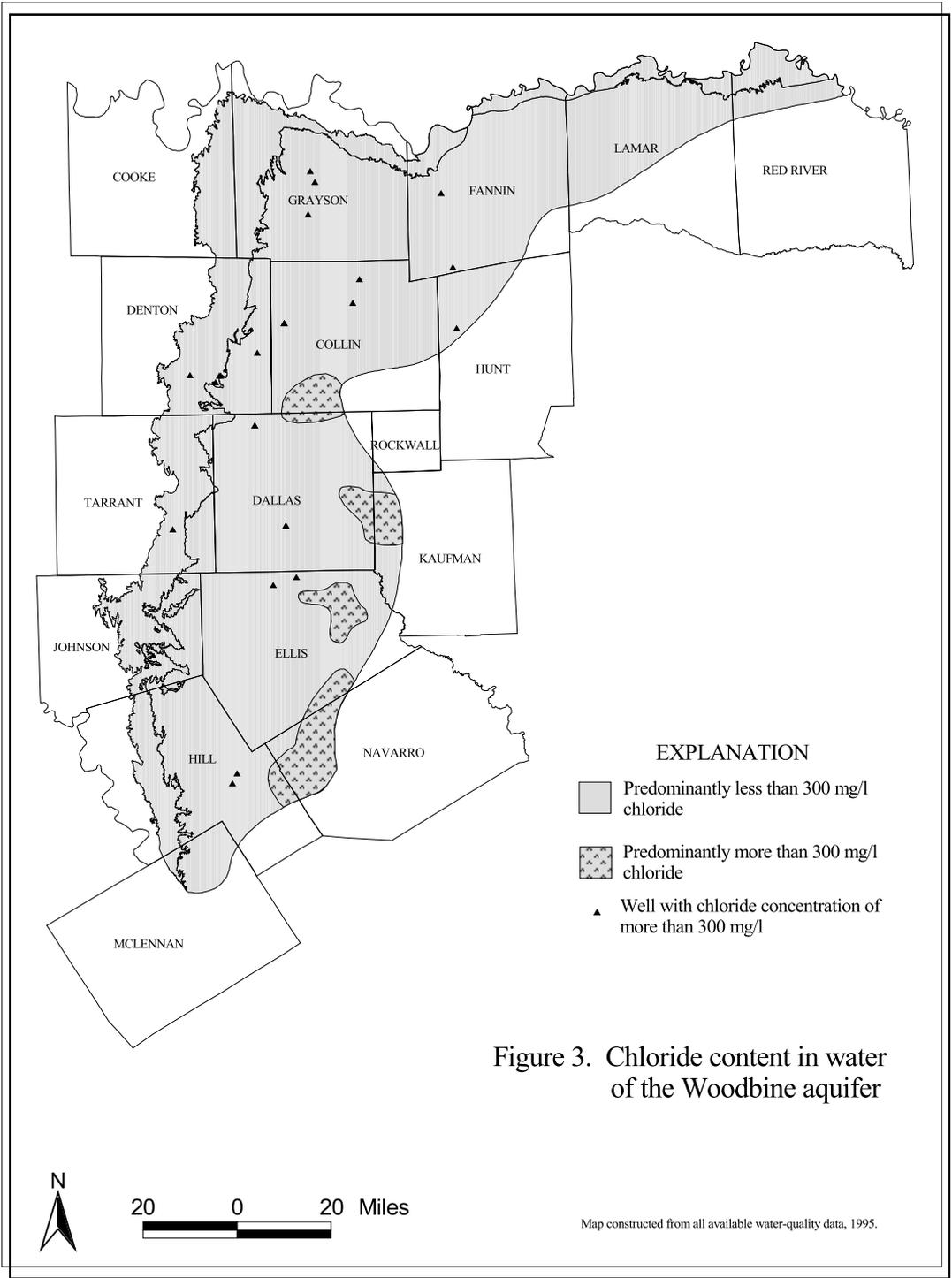
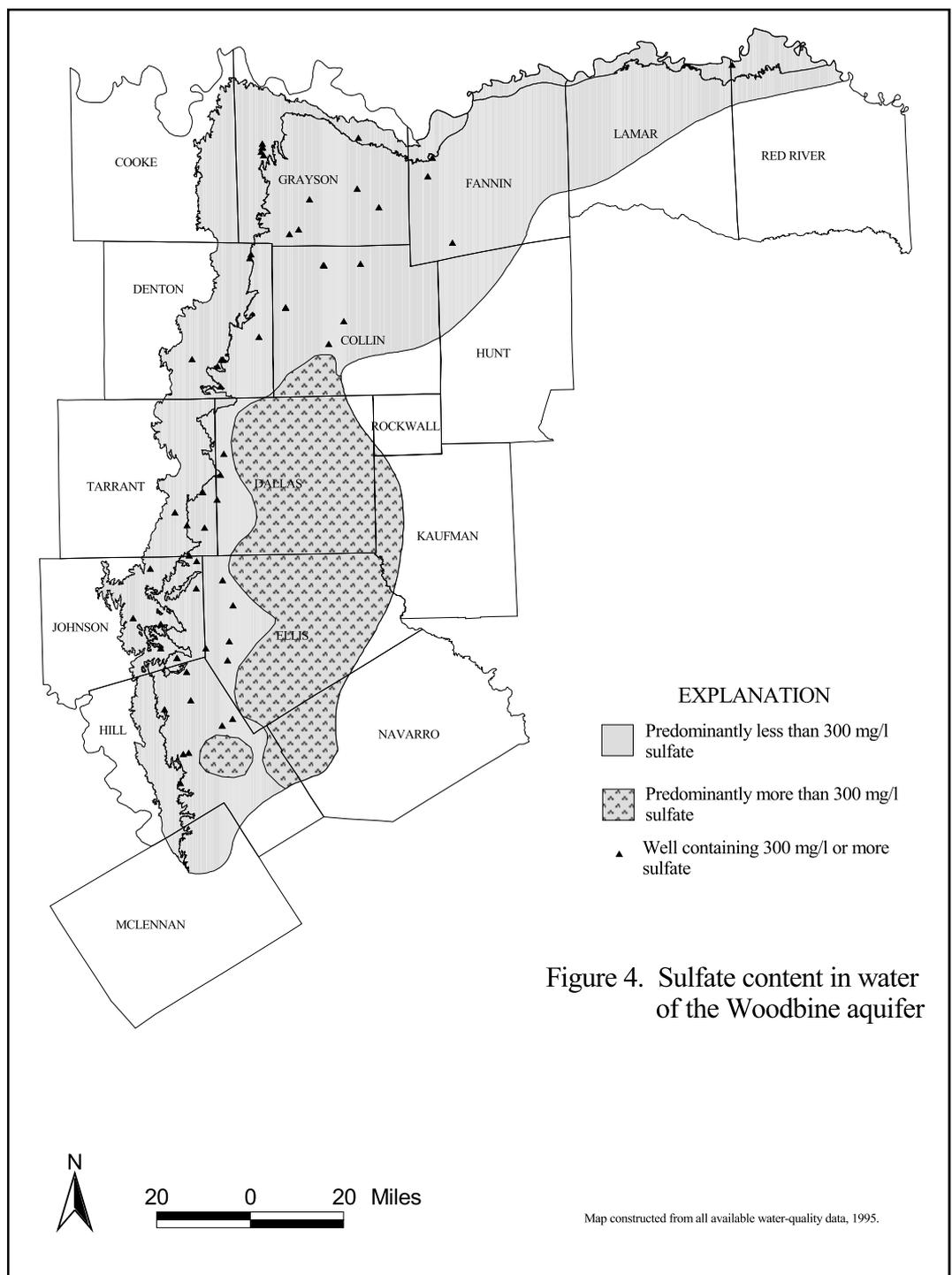


Chloride, naturally dissolved from rocks and soils, can also be introduced into ground water by human activities, as it is present in sewage, oil-field brines, industrial brines, and seawater (a possible contaminant of freshwater aquifers in areas of heavy pumpage). In large amounts in combination with sodium, chloride gives a salty taste to drinking water and can increase the corrosiveness of the water. In contrast to the large area in the southeast portion of the aquifer containing dissolved solids in excess of 1,000 mg/l, only four small areas (Figure 3) contain wells in which the chloride content is greater than the secondary MCL of 300 mg/l, consistent with the much smaller percentage of samples containing excess chloride (9 compared to 38 percent) and median value of 62 mg/l. Only a few isolated occurrences of wells with chloride values greater than 300 mg/l exist outside of these contours.



Sulfate is formed by the dissolution of sulfur from rocks and soils containing sulfur compounds such as gypsum, anhydrite, and iron sulfide. Sulfate in large amounts in combination with other ions gives a rotten-egg odor to drinking water. Thirty-three percent of the wells contained sulfate in excess of the secondary MCL of 300 mg/l, the majority of which are also in the southeast (Figure 4). The median sulfate value for these recent samples is 182 mg/l.



Fluoride is formed naturally from the leaching of fluoride-rich minerals typically associated with volcanic-ash deposits. Such deposits, described as volcanic tuffaceous sandstones, had a provenance in southwestern Arkansas and comprise a significant portion of the formation (Stephenson, 1952). Although only five percent of the recent analyses contained excess fluoride, older analyses contained higher percentages of excess fluoride. Contours on the map in Figure 5 indicate those regions in the southeast part of the study area where fluoride values are greater than the secondary MCL of 2.0 mg/l and areas in the extreme southeast where values are greater than the primary MCL of 4.0 mg/l.