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A Preliminary examination of the hydrogeology of the Sparta Aquifer and adjacent Aquifers in North Central Louisiana

The Sparta of aquifer of north central Louisiana is the largest source of groundwater in this part Louisiana, but it is alone as a source of water for north central Louisiana. Previous modeling studies have ignored other nearby aquifers: Wilcox, Mississippi alluvial, Upland Terrace and Cockfield and have considered Sparta alone. This work is an examination of these aquifers of north central Louisiana for the development of a groundwater model that will include all of these aquifers and will consider the interaction among these in a more complete manner than previous studies from the 1980s. It appears from examination of specific capacity tests that the hydraulic conductivity of the Sparta aquifer is greater than that for the Wilcox and Cockfield aquifers, but is smaller than that for the Upland Terrace and Mississippi alluvial aquifers. Hydraulic conductivity results for each of these aquifers will also be examined to see if there is any systematic variation in a lateral direction throughout the study area. In addition to noting spatial variation of the hydraulic properties of the aquifers of north central Louisiana there be an examination of possible effects of scale on hydraulic conductivity. Lastly there will be an examination of how geologic properties of the aquifers may influence hydraulic properties.