INTRODUCTION

This report is one in a series of reports that depict water-level altitudes and water-level changes in the Chicot, Evangeline, and Jasper aquifers, and compaction in the Chicot and Evangeline aquifers in the Houston-Galveston region. The Houston-Galveston region consists of the Chicot, Evangeline, and Jasper aquifers in the Harris-Galveston Coastal Subsidence District (HGCSDD), and the Fort Bend Subsidence District. The Chicot and Evangeline aquifers, maps show approximate water-level altitudes in 2002, water-level changes from 2001 to 2002, approximate year-to-year change for major intervals, in 5-year increments from 1977 to 2002, and approximate water-level changes from 1977 to 2002 (in the Fort Bend subregion [Fort Bend County and adjacent areas]). For the Jasper aquifer, maps show approximate water-level altitudes in 2002 and year-to-year change from 2001 to 2002 and year-to-year change from 1977 to 2002 (Fig. 1-11-15). The report also includes annual maps showing the change from the previous year (Fig. 1-11-15) and graphs showing measured compaction of subsurface material at selected sites from 1975 or 1976 to 2001 (Fig. 1-11-15).

The U.S. Geological Survey (USGS) has published annual reports of water-level altitudes and water-level changes for the Chicot and Evangeline aquifers in the Houston-Galveston region since 1979; and separate annual reports of same for the Fort Bend subregion since 1980. The USGS published their water-level altitudes in wells in the Chicot aquifer in the greater Houston area (primarily Harris County) in 2001. This year (2002), the altitudes and change maps for the three aquifers are in this report.

GEOLoogy

The Chicot aquifer (Holocene and Pleistocene-age sediments), Evangeline aquifer (in Pliocene- and Miocene-age sediments), and Jasper aquifer (in Miocene-age sediments) are the three primary aquifers in the Gulf Coast aquifer system. The lowermost Jasper aquifer is separated from the Evangeline aquifer by the Burkeville confining unit. The Evangeline in turn is separated from the Chicot aquifer by the Roarkville confining unit. The Chicot aquifer consists of the oldest aquifer单元 in the region, and the Chicot aquifer units are separated by the Roarkville confining unit. The Chicot aquifer can be differentiated from the Evangeline aquifer on the basis of hydraulic conductivity (Carr and others, 1985, p. 11). The Jasper aquifer can be differentiated from the Evangeline aquifer in the outcrop on the basis of young sediments. The lowermost Jasper aquifer is separated from the Evangeline aquifer by the Burkeville confining unit. The Chicot aquifer consists of primary and secondary aquifers in the Evangeline and Jasper aquifers.

WATER-LEVEL MEASUREMENTs

Water-level measurements used to prepare these maps were obtained by electronic, automatic, and from reports of well operators. Most wells are pumped at least once each year, and data are frequency. Multiple measurements are used when two water levels were used to describe aquifer properties. Water-level measurements were obtained from individual wells, from pumping tests, from piezometric points, from piezometers, and from other sources. Water-level data are used for the Chicot aquifer, 321 for the Evangeline aquifer, and 61 for the Jasper aquifer.

MEASURED COMPACTiON

Compilation of subsurface material is measured using the United States Geologic Interior Department of the Environment. The Chicot and Evangeline aquifers are shown in white on the Houston-Galveston region map. One point can represent two extensometers at the Clear Lake site is not shown because this point is similar to that measured by the deeper extensometer at the site. Graphs of long-term compaction for 12 extensometers are shown in Figure 15.

REFERENCES


Figure 1. Map showing approximate water-level altitudes in the Chicot aquifer, Houston-Galveston region, Texas, January-February 2002.