

INTRODUCTION

This report was prepared in cooperation with the Fort Bend Subsidence District and presents data on water-level changes in wells during 1990-93 and 1992-93 in the Chicot and Evangeline aquifers (figs. 1-4) in Fort Bend County. Water-level change maps were prepared previously by Locke (1990), and Locke and Santos (1992) for both aquifers, and by Wesselman (1972) for the Chicot aquifer.

GEOHYDROLOGY

The Chicot aquifer and the underlying Evangeline aquifer are composed of discontinuous sedimentary deposits of sand, silt, and clay, which thicken to the southeast (Wesselman, 1972). The primary basins for separating the Chicot aquifer from the underlying Evangeline aquifer is a difference in hydraulic conductivity. The hydraulic conductivity is greater in the Chicot aquifer than in the Evangeline aquifer, and, in part, causes the difference in the altitude of the water levels in wells completed in the two aquifers (Meyer and Carr, 1979). Water levels in wells completed in the Chicot aquifer are higher than the water levels in wells completed in the Evangeline aquifer because more water was pumped from the Evangeline aquifer than from the Chicot aquifer. Because there is a hydraulic connection between the Chicot and Evangeline aquifers and between the Chicot aquifer and the streams on land surface, the system is termed "leaky" (Carr and others, 1985).

WATER-LEVEL MEASUREMENTS

Water levels used in preparation of this report were obtained from measurements with steel tape, air line, and electronic sensors, and from reports by well operators. Water-level measurements were made in January and February of 1990 through 1993. Water-level measurements from Wharton County were made by the Texas Water Development Board. These measurements were supplemental and used to extend Fort Bend County data to the western border of the county. The data for wells having comparable depths and screen intervals were selected for construction of the maps. The maps were prepared using water levels from 82 wells. During 1990-93 and 1992-93, water levels rose less than 5 feet throughout most of the county in the Chicot aquifer and declined less than 5 feet in the Evangeline aquifer except in the northeast part of Fort Bend County.

REFERENCES CITED

Carr, J.E., Meyer, W.R., Sandeen, W.M., and McLane, L.R., 1985, Digital models for simulation of ground-water hydrology of the Chicot and Evangeline aquifers along the Gulf Coast of Texas: Texas Department of Water Resources Report 289, 101 p.  
Locke, G.L., 1990, Ground-water withdrawals, water-level changes, land-surface subsidence, and ground-water quality in Fort Bend County, Texas, 1969-87: U.S. Geological Survey Water-Resources Investigations Report 90-4012, 155 p.  
Locke, G.L., and Santos, H.X., 1992, Approximate water-level changes in wells completed in the Chicot and Evangeline aquifers, 1991-92, in Fort Bend County and adjacent areas, Texas: U.S. Geological Survey Open-File Report 92-53, 2 sheets.  
Meyer, W.R., and Carr, J.E., 1979, A digital model for simulation of ground-water hydrology in the Houston area, Texas: Texas Department of Water Resources Report LP-103, 104 p.  
Wesselman, J.B., 1972, Ground-water resources of Fort Bend County, Texas: Texas Water Development Board Report 155, 185 p.

CONVERSION FACTORS AND VERTICAL DATUM

Multiply	By	To obtain
foot	0.3048	meter
mile	1.609	kilometer

Sea level: In this report "sea level" refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)—a geodetic datum derived from a general adjustment of the first-order level nets of the United States and Canada, formerly called Sea Level Datum of 1929.

EXPLANATION

- 5 — LINE OF EQUAL WATER-LEVEL CHANGE--  
Dashed where approximately located  
Interval 5 feet
- AREA WHERE WATER LEVELS DECLINE

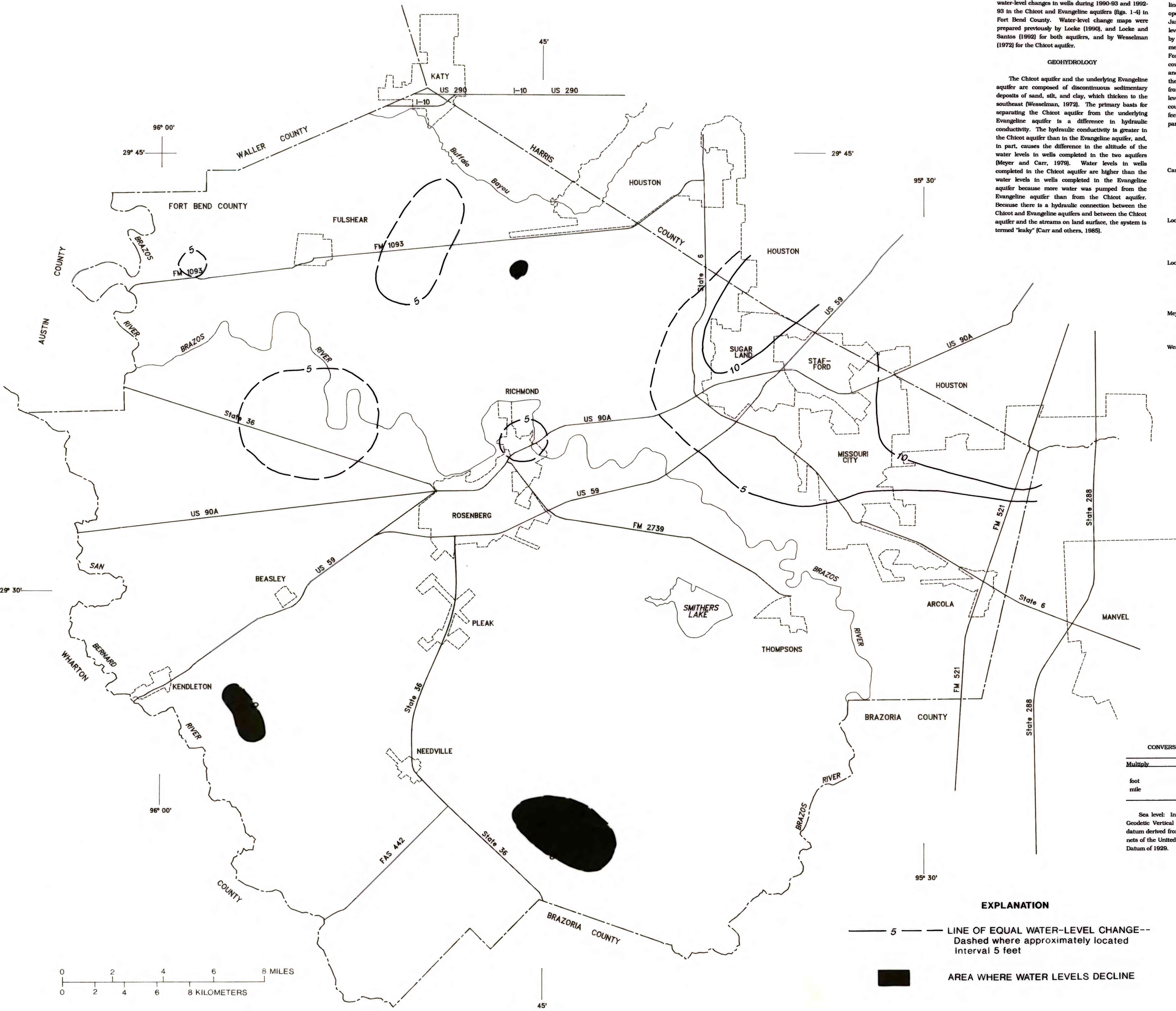


Figure 1.--Map showing approximate changes in water levels in wells completed in the Chicot aquifer, 1990-93.

Base modified from Texas Department of Highways  
and Public Transportation General Highway Maps

APPROXIMATE CHANGES IN WATER LEVELS IN WELLS COMPLETED IN THE CHICOT AND EVANGELINE AQUIFERS, 1990-93 AND 1992-93, IN FORT BEND COUNTY AND ADJACENT AREAS, TEXAS

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