ABSTRACT

Water-level measurements were made on a periodic basis from October 1993 through December 1994. The results of the study are intended to be a part of a larger investigation of water-level changes in the upper Cape Fear Aquifer.--WATER-RESOURCES INVESTIGATIONS REPORT 88-142.

INTRODUCTION

In 1991, the U.S. Geological Survey (USGS) began a study of water-level and hydraulic head changes in the upper Cape Fear Aquifer in eastern North Carolina. The study is designed to evaluate the effects of various natural and anthropogenic factors on water-level changes in the aquifer. The USGS is currently monitoring water-level changes in the upper Cape Fear Aquifer using a network of observation wells, and this report presents the results of the study for the period from October 1993 through December 1994.

The USGS is monitoring water-level changes in the upper Cape Fear Aquifer using a network of observation wells. The network consists of 30 observation wells, which are evenly distributed throughout the study area. The wells are equipped with recording water-level gauges, and the data are transmitted to the USGS via satellite. The data are then analyzed to determine the effects of various natural and anthropogenic factors on water-level changes in the aquifer.

METHODS

The USGS is monitoring water-level changes in the upper Cape Fear Aquifer using a network of observation wells. The network consists of 30 observation wells, which are evenly distributed throughout the study area. The wells are equipped with recording water-level gauges, and the data are transmitted to the USGS via satellite. The data are then analyzed to determine the effects of various natural and anthropogenic factors on water-level changes in the aquifer.

RESULTS

The results of the study show that water-level changes in the upper Cape Fear Aquifer are influenced by a variety of natural and anthropogenic factors. The most significant factor is precipitation, which is the primary source of recharge to the aquifer. The results also show that water-level changes are influenced by the location of the well, the depth to water, and the distance from the well to the coastline. The results of the study are presented in a series of maps and tables, which are included in the report.

Figure 1. The study area within the Lumbee River Basin of North Carolina, and a view of the map of the study area.

Figure 2. Generalized hydrogeologic sections E and F.

Figure 3. Generalized hydrogeologic section A-A' from the map of the study area.

Figure 4. Phosphorite surface of the upper Cape Fear Aquifer in parts of Bladen, Columbus, and Robeson Counties, North Carolina, September and October 1994.

Water-Level Conditions in the Upper Cape Fear Aquifer, 1994-98, in Parts of Bladen and Rebeoso Counties, North Carolina

By A.G. Strickland

1998