

Hydrology - Open-File Report 22

Aquifer Storage Recovery in Coastal Plain Sediments at Myrtle Beach, South Carolina

By
Joffre Castro
1987

ABSTRACT

The rapid growth and economical development of the city of Myrtle Beach and surrounding areas have subjected the Black Creek aquifers to large ground-water withdrawals. Increased water demands have stressed the hydrological system to the point that dewatering of the aquifers probably will occur by the year 1990. One solution to this problem, known as Aquifer Storage Recovery (ASR), is currently being investigated.

A surface-water treatment plant on the Atlantic Intracoastal Waterway (AICW) is under construction in Myrtle Beach. At this site two ASR strategies might be feasible. Treated surface water from the plant could be injected into the aquifers of the Black Creek Formation or into the nonpotable aquifers of the Middendorf Formation. The surplus treated water would be stored during the winter months to counter the declining water levels and to reduce the potential for saltwater intrusion; and it would be recovered in the peak water-demand season during the summer.

The objective of this project is to study and determine the feasibility of utilizing Black Creek and Middendorf aquifers for the injection, storage, and recovery of potable water. The investigation will focus on identifying pretreatment methods to prevent clay dispersion, clay swelling, and undesirable chemical precipitations resulting from the mixing of treated surface water with the native formation water.

The general approach involves obtaining core samples from the potential storage zones, running column tests to determine the effectiveness of pretreatment methods, performing chemical balance and solute-transport computer simulations, and constructing a prototype ASR well.

Copies of this report are available in the SCDNR's Columbia office.