

THE MECHANISM OF UNDERGROUND SALINE INTRUSION INTO FRESHWATER AQUIFERS IN INLAND OF CHINA

WEIFEN SUN, Comprehensive Institute of Geotechnical Investigation and Surveying, (CIGIS) Ministry of Construction, P. R. CHINA

On the basis of complete field investigations, experiments this paper draws the following major results and conclusions: By means of demonstration, it becomes clear that overpumping groundwater is the radical cause of the saline groundwater invasion into the freshwater aquifer. The mechanism and rules of underground saline intrusion were studied: 1. The basic difference between the mechanism of underground saline intrusion into freshwater aquifers in inland areas and that of seawater intrusion in seashore areas lies in the fact that the salinity concentration of the source of seawater intrusion keeps as a constant while that of inland saline groundwater bodies (source of intrusion) often tends to be a variable because of the uneven content of salinity in the stratum where the saline water bodies exist. 2. There is a zone mixed with both saline and fresh water in the inland saline intrusion as well. But under the condition of exploitation - especially the exploitation of both saline and fresh water, the groundwater in the mixed zone has the mixing of saline and fresh water aquifers at not only horizontal planes but also vertical levels. 3. Two periods can be divided for the intrusion of inland saline water, being different from each other in the features of migration of the interface. In the previous period, the migratory interface keeps reciprocating in the tide-style movement; however in the latter period, the interface is subject to the depression cone effects of expansion and contraction of the scale of at the exploitation stage and non-exploitation stage respectively.