



Selecting an optimal emergency operation measure based on multicriteria decision-making method in the Middle Route of the South-to-North Water Diversion Project

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The Middle Route of the South-to-North Water Diversion Project (MRP) is the most important long-distance water diversion project in China. Any emergency conditions along the route would threaten water supplies throughout the command areas. In this study, a one-dimensional hydrodynamic model was developed to simulate the implementation effect under gate emergency operations in the accident pool, upstream and downstream pools. In order to select an optimal emergency operation measure among alternative measures, multiple criteria were considered including four objectives, and the multicriteria decision-making method of technique for order preference by similarity to ideal solution was applied. The weightings of each criterion were determined by the combined use of the analytic hierarchy process and the entropy method. The results of case study indicated that, these technologies can easily solve the complicated issue to determine an optimal emergency operation measure of the gates in the MRP.