Determine the Vulnerability of Surface Water Resources in the Rach Gia City, Kien Giang Province Using GIS

Trinh Thi Phin and Dinh Thi Bao Hoa (Vietnam)

Key words: Coastal Zone Management; GIS, multicriteria analysis, pollution, vulnerability, water retention, salinity intrusion

SUMMARY

Rach Gia city is located in the west coast of the Mekong Delta. Due to high salinity intrusion of underground aquifers, surface water is the main source of mining. The water retention consists of reservoirs with around 600,000 m3 and 3.2 km length of a canal. These resources are taken from rivers and canals in the area. However, surface water in the area is contaminated by human activities such as waste water discharge, waterway traffics,... Especially in the dry season, when water levels in rivers and canals reaches low and high tides lead to the salinity intrusion infiltrate into rivers, affecting water supplies to water plant. Therefore, necessary to identify the vulnerabilities by pollution on reservoirs and canals, the methodological approach employs a spatial analysis model integrating several previously parameters defined such as slope, land use, drainage network density, runoff, salinity levels. They will be prioritized and weighted and then integrated into a geographic information system (GIS). The results show that drainage network density and land use are majors on causing vulnerability by pollution of surface water resource. Despite the subjectivity involved in the weighing of analytic hierarchy process (AHP), the study determined levels of vulnerability as well factors that cause pollution. This results will support the protection of surface water resources