

Ground Water Quality Improvement of Jaffna Peninsula of Sri Lanka by Regulating Water Flow in the Lagoon Mouths

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Abstract— Within Jaffna peninsula there are three lagoons, Thondamanaru lagoon, Upparu lagoon and the Valukiaru lagoon with water spread area of 78, 26 and 14 square kilometers respectively. These three shallow lagoons cover around 11.8% of the peninsula's land area of 1036 square kilometers. These lagoons are having sea mouths at Thondamanaru, Ariyali and Arali in the vicinity of Indian Ocean which covers the peninsula by 160 km of coastline and no location of peninsula is more than 10 km away from the coast. Hence it is very much susceptible to the salt water intrusion into the land area. The water resource mainly the underground water in Jaffna Peninsula is totally polluted due to prolonged negligence and improper management of existing barrages at the lagoon mouths and the salt water intrusion has taken place. In addition to these garbage and soakage pit pollution and increased usage of fertilizer chemicals also affected the quality of ground water. As a result, people are facing problem in getting good quality water in their wells. Due to the salt water intrusion, hundreds of acres of lands, hundreds of wells are in abandon stage. There is a positive relationship between the level of salt water intrusion in Jaffna peninsula and the operation of the gates of Thondamanaru, Ariyali and Arali barrages. There is strong evidence from a survey conducted recently that a good correlation can be found for the entire lagoon system operation with the level of salt water intrusion effect of Jaffna peninsula. This paper outlines the research methodology and its direction towards the problem accreditation of an on going research to address the problem and to find a solution to this long standing crucial issue of the people of Jaffna peninsula of Sri Lanka.