River for Jaffna-Cultivating Productive Water from Salt Water Lagoons in Northern Sri Lanka-What the Water Balance of Elephant Pass Lagoon Demonstrates?

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Abstract — The proposal of converting Jaffna salt water lagoons in northern Sri Lanka to fresh water lakes is revived again in the recent days due to the increasing demand and dearth of fresh water in this region. Jaffna lagoon consists of two internal lagoons in the Jaffna peninsula and the external lagoon, Elephant pass. Four intermittent rivers with the total catchment area of 940km2 drain to the Elephant pass lagoon. This study focused on water balance of the proposed Elephant Pass fresh water Lake and hence available productive water for usage. Microsoft Excel based simplified reservoir simulation model was developed to study the water balance of the lagoon. Minimum operating level was set at 0.0 m MSL with the proposed spill crest level of 1.2 m MSL. The results of the monthly simulation of lake showed that even after high evaporation loss, nearly 2 MCM/month was available for release throughout the year. With upstream spill, nearly 4 MCM/month was available and excess of 6 MCM/month could be drawn from December to April. This study can be basis for future detail hydrological model study and planning of Elephant Pass lagoon for best use of water with minimum negative environmental impact.