

## Fluvial Stage-Discharge Rating of a Selected Reach of Jamuna River

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**Abstract :** A study has been undertaken to develop a fluvial stage-discharge rating curve for Jamuna River. Past Cross-sectional survey of Jamuna River reach within Sirajgonj and Tangail has been analyzed. The analysis includes the estimation of discharge carrying capacity, possible maximum scour depth and sediment transport capacity of the selected reaches. To predict the discharge and sediment carrying capacity, stream flow data which include cross-sectional area, top width, water surface slope and median diameter of the bed material of selected stations have been collected and some are calculated from reduced level data. A well-known resistance equation has been adopted and modified to a simple form in order to be used in the present analysis. The modified resistance equation has been used to calculate the mean velocity through the channel sections. In addition, a sediment transport equation has been applied for the prediction of transport capacity of the various sections. Results show that the existing drainage sections of Jamuna channel reach under study have adequate carrying capacity under existing bank-full conditions, but these reaches are subject to bed erosion even in low flow situations. Regarding sediment transport rate, it can be estimated that the channel flow has a relatively high range of bed material concentration. Finally, stage discharge curves for various sections have been developed. Based on stage-discharge rating data of various sections, water surface profile and sediment-rating curve of Jamuna River have been developed and also the flooding conditions have been analyzed from predicted water surface profile.

**Keywords :** discharge rating, flow profile, fluvial, sediment rating

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