

Some issues of assessment of maximum water expenditure at river crossings

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Research and calculation of maximum runoff is one of the most important issues both from scientific and practical viewpoint. Scientific importance is explained first of all by the fact that spring floods and rainfall floods represent general form of water regime of rivers of one or another region and basic part of volume of runoff, and even the total annual runoff at small outfalls. Practical significance lies in the fact that determination of maximum water expenditures and calculation of hydraulic works by their means have an effect not only on the cost of hydraulic structures, but also on their uninterrupted work and stability, which sometimes is related to very broad interests of water supply organizations.

Different criteria are in force in different countries for determination of calculated provision of hydraulic structures and they vary from 0,001% to 3,3%. Some countries have no such criteria at all. Application of 0,1% calculated provision as a criterion of maximum water expenditure is widespread in Georgia.

But due to sharp seasonal changes of river runoffs, different reactions, peaks of maximum levels and water expenditure as a result of climate changes of recent years we tend to give preference to 0,5% calculated provision. These criteria become especially tough in case of mountain rivers.

In general, determination of the value of calculated provision, establishment of maximum expenditure and selection of corresponding distribution function is very complicated task, since, on one hand, reduction of calculated maximum expenditures leads us to destruction of facility, followed by victims and material losses, while on the other hand, its increase will cause rising of total cost of facilities and reduction of economical efficiency.

Determination of calculated provision is depended on facility strength, categories, financial expenditures, on economic and ecological damage in case of potential accident etc. That's why we should very carefully address to the research of mentioned issues based on specific hydroeconomic task in order to reduce the risk of negative impact on environment to the minimum.