with hydrometeorological methods and solve the part that has a small impact with hydrological methods.

The hydrometeorological methods are the same as those used for estimation of PMP introduced in Chapters 2, 3 and 5 and sections 7.3–7.5 in Chapter 7.

The hydrological methods include calculations based on the space inflow proportion or the temporal distribution proportion in typical floods, the correlation method (regional flood volume correlation or short- and long-term-interval flood volume correlation), the method of transport capacity control of the upper reach, and so on.

The parts having a great or small impact are:

(a) In terms of flood sources (or space), the section having a great impact is the main source region where PMF is formed, and the other regions have little impact;
(b) In terms of flood hydrographs (or time), the part having a great impact is the discharge hydrograph for the largest flood volume that has a great impact on the flood control of the project in a short time interval (for example, 5 days) within the duration of the design flood (for example, 12 days), and the discharge hydrographs for the other time interval (for example, 12 – 5 = 7 days) have little impact.

7.7.2.2 Procedure

7.7.2.2.1 *PMP/PMF for major reaches*

General steps for estimating PMP/PMF for major reaches are:

(a) According to the type of storm, the watershed above the design section A (Figure 7.14) is divided into two parts, that is, the reach above section B and below section B, referred to as the BA reach.
(b) PMP is derived for the BA reach with direct methods.
(c) Runoff yield and concentration calculations on PMP is performed for the BA reach and the base flow is added to acquire an estimate of the PMF for the BA reach.
(d) The corresponding flood above section B under the condition of the occurrence of PMF in the BA reach is obtained using hydrological methods. Flows are routed to the design section A, and added to the PMF hydrograph for the BA reach, and the result is the PMF hydrograph for the design section A.

7.7.2.2.2 *Estimating PMF for long time intervals*

General steps are as follows:

(a) PMF is determined for the major time interval t_1 of the time interval T of the design flood using direct methods.
(b) Methods for the calculation of the flood for the remaining time interval $t_2 = T - t_1$ depend on the size of the basin. Hydrological methods are used when the size of the basin is small.
(c) Flood hydrographs obtained from the above two steps are pieced together to obtain PMF for the time interval of the design flood.

7.7.2.3 Example calculations

Tables 7.9 and 7.10 show the watershed conditions for four key projects in China and methods for deriving PMP/PMF.

Estimations for the Qikou and Sanmenxia projects were determined by the Survey and Design Institute, the Yellow River Conservancy Commission. Estimates for the Ertan and Manwan projects were made by the Chengdu Survey and Design Institute and the Kunming Survey and Design Institute of the Ministry of Water Resources (Wang G., 1999).

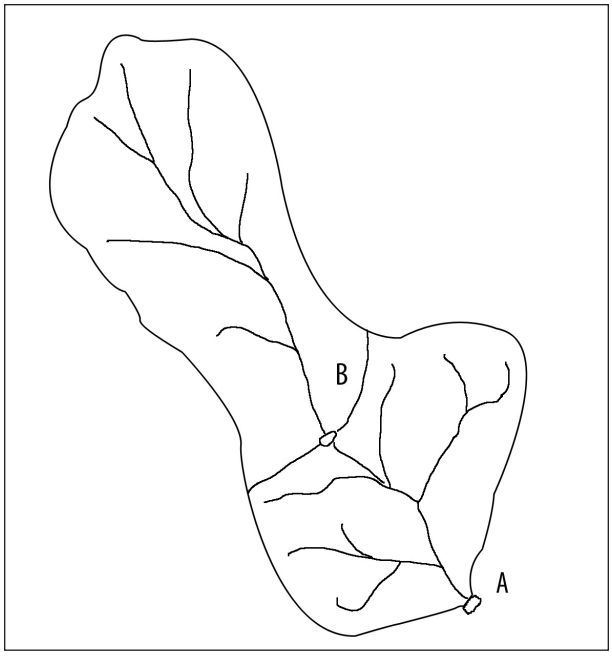

Figure 7.14. Watershed diagram of design project A