1994; and Corrigan and others, 1998) and is termed a rationality check in China (section 7.2.7 of the manual). Results are quality controlled through such a comparison.

When evaluating various PMP estimates, there are some other aspects to consider:

(a) the amount by which the estimated PMP exceeds the maximum observed rainfall values for the surrounding meteorologically homogeneous region;
(b) the frequency and severity of recorded storms that have occurred in the region;
(c) limitations on storm transposition in the region;
(d) the number of times and character of maximization, and correlations between them;
(e) the reliability of relations between rainfalls and other meteorological variables in the model;
(f) occurrence probabilities of individual meteorological variables in the model, though excessive combination of rare occurrences should be avoided.

Although the procedures described here produce PMP estimates to the nearest millimetre or tenth of an inch, this should not be used to indicate the degree of accuracy.

1.7 THE MANUAL

1.7.1 Objective

The objective of compiling this manual is to make a systematic description of the methods for deriving PMP presently in common use around the world. The manual includes basic ideas, critical links, points for attention and common terms for engineers and designers to refer to in relation to their particular projects.

The manual assumes readers possess knowledge of hydrometeorology; thus basic meteorological and hydrological terms and procedures are not described.

1.7.2 Scope

With regard to its regional scope, the manual describes approaches applicable to estimating PMP for rivers with mostly stormy floods in middle and low latitudes, not approaches for estimating PMP for rivers with mostly snow-melt floods in high latitudes.

In terms of area and duration, Chapters 2 to 6 elaborate common meteorological methods for estimating PMP for watersheds with areas less than 50 000 km^2 in non-orographic regions and less than 13 000 km^2 in orographic regions (the statistical estimation method in Chapter 4 generally applies to areas less than 1 000 km^2) for a precipitation duration of less than 72 hours. In principle, the approaches in Chapter 7 can be applied to estimating PMP for all sorts of areas in both orographic and non-orographic regions and with a variety of precipitation durations. Chapter 7 emphasizes that estimation of PMP should consider the requirements of a given project in the design watershed. Aspects such as critical duration, flood peak and flood volume are important considerations in arriving at an appropriate estimate of PMF.

Chapter 7 provides approaches to address the estimation of PMP for large watersheds with areas between 50 000 km^2 and 1 000 000 km^2 while other approaches have also been used (Morrison-Knudson Engineers, lnc., 1990).

While methods for PMP estimation in Chapter 7 are used to estimate PMF for a given project in the design watershed, some further attention could have been given to the estimation of PMF in this manual. However, as the focus of the manual is on PMP estimation, it was not considered appropriate to discuss PMF in detail. Therefore, the manual limits itself to highlighting some important features of watershed runoff yield and watershed confluence during PMP by way of background to corresponding methods for PMF estimation. The manual does not discuss issues such as deriving maximum seasonal accumulation of snow and optimal snowmelting rate necessary to produce the PMF in some regions. Standard hydrological references for these aspects include: German Water Resources Association, 1983; Institution of Engineers, Australia, 1987; Cudworth, 1989; United States Army Corps of Engineers, 1996; Wang G., 1999; WMO-No. 233; WMO-No. 168; WMO-No. 425); and web references (for example, http://www.ferc.gov/industries/hydropower/safety/guidelines/fema-94.pdf).

1.7.3 Application of examples

The manual describes common practical methods for estimating PMP using examples from published reports on PMP for storm areas and watershed areas with different sizes, climates and topographies. There are two main reasons for using such examples: first, they are actual calculations for actual watersheds rather than imaginary cases; and second, these examples are supported by detailed reports,