

## **Chapter 1 Introduction**

### **1-1. Purpose**

This manual presents fundamental principles underlying the design and construction of earth and rock-fill dams. The general principles presented herein are also applicable to the design and construction of earth levees. The construction of earth dams by hydraulic means was curtailed in the 1940's due to economic considerations and liquefaction concerns during earthquake loading and are not discussed herein.

### **1-2. Applicability**

This manual applies to HQUSACE elements, major subordinate commands, districts, laboratories, and field operating activities having responsibility for the design and construction of earth and rock-fill dams.

### **1-3. References**

Required and related publications are listed in Appendix A.

### **1-4. Overview of Manual**

The objective of this manual is to present guidance on the design, construction, and performance monitoring of and modifications to embankment dams. The manual presents general guidance and is not intended to supplant the creative thinking and judgment of the designer for a particular project.

The increased development and expansion of the population in the Nation's watersheds have created a definite need to develop additional water supply. In many areas the existing national infrastructure cannot meet these needs. The increase in urban development has also had a negative impact on water quality. The public is asking that preservation of the environment be an equal goal with the economic benefits of water resources projects. Since the current infrastructure is not meeting public needs, this situation is placing lives, livelihood, and property at risk. Several options are available to provide the additional quantity of water. The simplest and most cost-effective method to obtain the quantities needed is to add additional storage at existing dams. Many of the Nation's existing water resources projects must be modified to add the additional purpose of water supply. In the future, USACE designers will be challenged with requests by the customers and sponsors to modify existing dams to add water supply to other purposes of existing dams. These modifications must include environmental considerations and mitigation.