

CHAPTER 1

INTRODUCTION

1-1. Purpose and scope. The purpose of this manual is to discuss normal requirements for design of surface and subsurface drainage systems for military construction other than airfields and heliports at Army, Air Force and similar installations. Sound engineering practice should be followed when unusual or special requirements not covered by these instructions are encountered.

1-2. General investigations. An on-site investigation of the system site and tributary area is a prerequisite for study of drainage requirements. Information regarding capacity, elevations, and condition of existing drains will be obtained. Topography, size and shape of drainage area, and extent and type of development; profiles, cross sections, and roughness data on pertinent existing streams and watercourses; and location of possible ponding areas will be determined. Thorough knowledge of climatic conditions and precipitation characteristics is essential. Adequate information regarding soil conditions, including types, permeability on perviousness, vegetative cover, depth to and movement of subsurface water, and depth of frost will be secured. outfall and downstream flow conditions, including high-water occurrences and frequencies, also must be determined. Effect of base drainage construction on local interests' facilities and local requirements that will affect the design of the drainage works will be evaluated. Where diversion of runoff is proposed, particular effort will be made to avoid resultant

downstream conditions leading to unfavorable public relations, costly litigations, or damage claims. Any agreements needed to obtain drainage easements and/or avoid interference with water rights will be determined at the time of design and consummated prior to initiation of construction. Possible adverse effects on water quality due to disposal of drainage in waterways involved in water-supply systems will be evaluated.

1-3. Environmental considerations.

a. Surface drainage systems have either beneficial or adverse environmental impacts affecting water, land, ecology, and socio-economic considerations. Effects on surrounding land and vegetation may cause changes in various conditions in the existing environment, such as surface water quantity and quality, groundwater levels and quality, drainage areas, animal and aquatic life, and land use. Environmental attributes related to water could include such items as erosion, flood potential, flow variations, biochemical oxygen demand, content of dissolved solids, nutrients and coliform organisms. These are among many possible attributes to be considered in evaluating environmental impacts, both beneficial and adverse, including effects on surface water and groundwater.

b. Federal agencies shall initiate measures to direct their policies, plans, and programs so as to meet national environmental goals and standards.