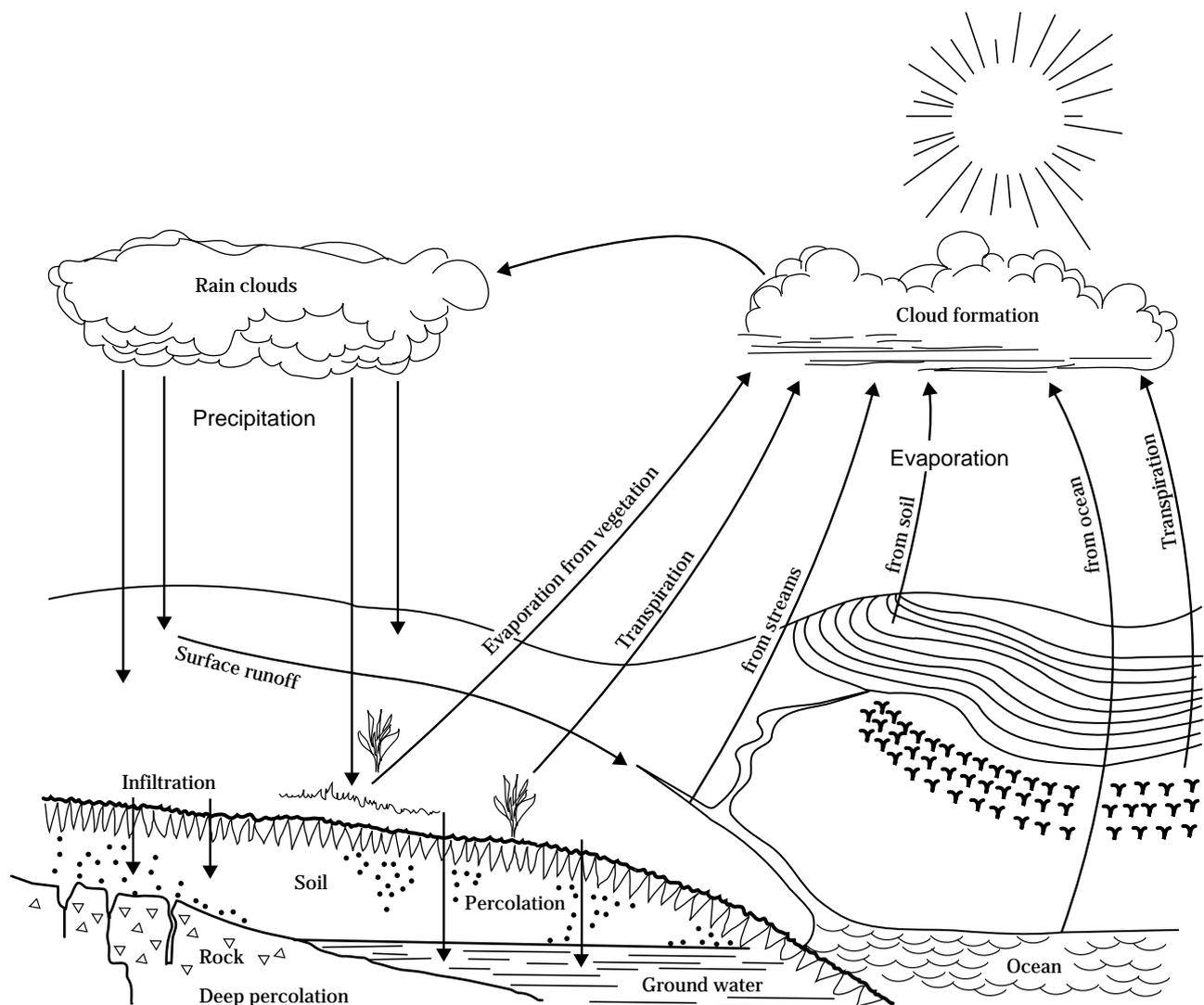


Chapter 1 Introduction



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Chapter 1

Introduction

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630.0100 Introduction

The NRCS National Engineering Handbook (NEH) is intended primarily for Natural Resources Conservation Service (NRCS) engineers and technicians. It presents material needed to carry out NRCS responsibilities in natural resources conservation and flood prevention. Part 630, Hydrology, contains methods and examples for:

- Studying the hydrology of watersheds
- Solving special hydrologic problems that arise in planning watershed protection and flood prevention projects
- Preparing working tools needed to plan or design structures for water use, control, and disposal
- Training personnel newly assigned to activities that include hydrologic studies

(a) Scope

NEH part 630 contains some new techniques developed by NRCS personnel to meet specific needs of the agency. Well-known techniques from other sources are included where necessary to illustrate special applications to watershed-project planning, evaluation, and design. Hydrologic theory is held to the minimum necessary to show the development of methods not readily available elsewhere. References to hydrologic literature are given if they provide additional theory, data, discussion, or details of a method.

Each major kind of hydrologic problem is described, and, where possible, alternative solutions are given and their relative merits are briefly considered. Descriptive material is kept to a minimum. All equations and examples are numbered for ease of reference. This part of the handbook is arranged so that each principal subject is covered in a separate chapter, and cross-references to other chapters are made as needed. Each chapter in part 630 is a reference to specific topics, methods, and examples; the glossary (chapter 22) is a reference to specific terms.

630.0101 Duties and responsibilities of NRCS hydrologists

Memorandums from the NRCS Conservation Engineering Division director define the duties and responsibilities of NRCS hydrologists. One of the more important responsibilities is that of choosing the most suitable hydrologic method to use for a given problem.

NRCS projects requiring some application of hydrology may range in construction cost from a few hundred dollars to several million dollars. A hydrologic method suitable at one end of this range generally is unsuitable at the other. Two projects of about the same cost may require widely different methods because of differences in available data, location of benefits, or topography. The chosen method in each case must be adequate to arrive at sound conclusions in terms of conditions, objectives, and functions of the project. The advice of the national hydrologist should be sought if there is doubt about the suitability of a method. For studies in which the choice of method is limited by available survey time or funds, the results must be regarded as tentative pending an investigation of sufficient scope.

Because watershed planning is a team effort, the hydrologist must be familiar with the work and needs of the economist, geologist, design engineer, and others who will use the results of a hydrologic study. To familiarize others with the hydrology work and needs, the hydrologist must be able to describe the theories and working details of the methods used, the data required, what calculations are made and how they are made, and to give the approximate number of staff days needed to complete a job.

630.0102 Other technical guides

NRCS hydrologists should have and be familiar with other national guides and handbooks used in NRCS.

Publications of special interest are:

- Watershed Protection Handbook
- Economic Guide for Watershed Protection and Flood Prevention
- NRCS National Engineering Handbook:
 - Part 634 (Section 5) Hydraulic Engineering
 - Part 623 (Section 15) Irrigation
 - Part 624 (Section 16) Drainage
- Technical releases
- Handbooks issued by NRCS state offices

They should also be familiar with the handbooks, manuals, and other inservice publications of the other agencies in a cooperative study. NRCS methods and those of a cooperating agency may be needed to meet, as nearly as possible, the requirements of both agencies. However, NRCS methods must be used for NRCS projects unless approval to use other methods is obtained from the director of the NRCS Conservation Engineering Division.

NRCS hydrologists are expected to keep up-to-date on new developments in hydrology by reading technical papers in transactions, proceedings, or journals of such organizations as the American Society of Agricultural Engineers, American Society of Civil Engineers, Society of American Foresters, American Geophysical Union, Soil and Water Conservation Society of America, American Institute of Hydrology, and Soil Science Society of America. The solution of hydrologic problems requires a knowledge of several interrelated sciences, and hydrologists must accept every opportunity to increase their knowledge of the geology, soils, plant life, climatic variations, and agricultural practices of their assigned areas.