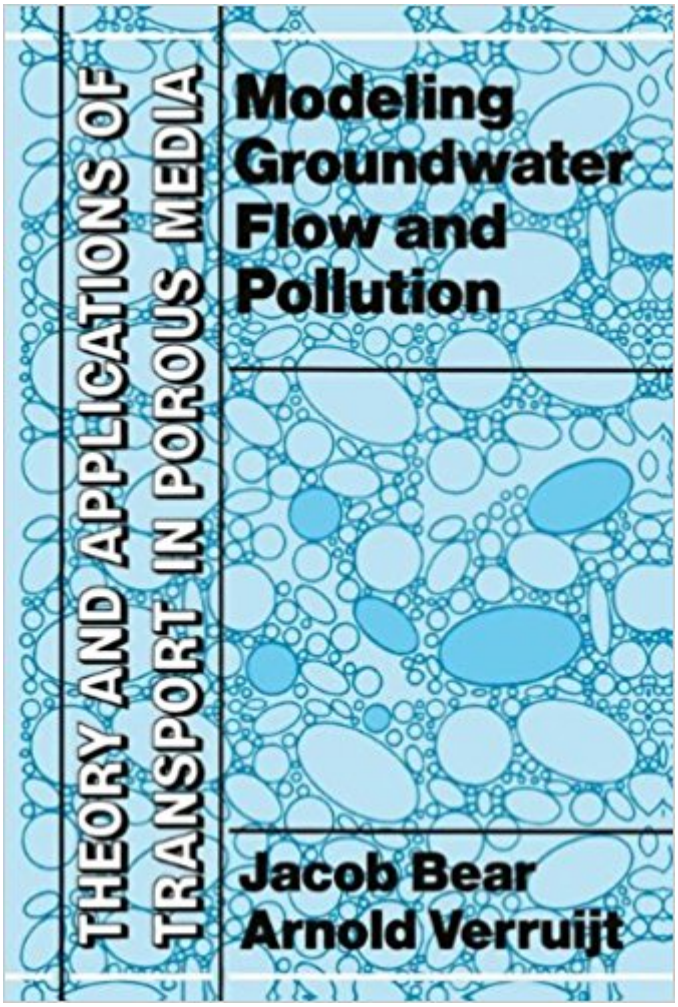
Modeling Groundwater Flow And Pollution (Theory And Applications Of Transport In Porous Media)



Synopsis

Groundwater constitutes an important component of many water resource systems, supplying water for domestic use, for industry, and for agriculture. Management of a groundwater system, an aquifer, or a system of aquifers, means making such decisions as to the total quantity of water to be withdrawn annually, the location of wells for pumping and for artificial recharge and their rates, and control conditions at aquifer boundaries. Not less important are decisions related to groundwater qUality. In fact, the quantity and quality problems cannot be separated. In many parts of the world, with the increased withdrawal of groundÃ Â- water, often beyond permissible limits, the quality of groundwater has been continuously deteriorating, causing much concern to both suppliers and users. In recent years, in addition to general groundwater quality aspects, public attention has been focused on groundwater contamination by hazardous industrial wastes, by leachate from landfills, by oil spills, and by agricultural activities such as the use of fertilizers, pesticides, and herbicides, and by radioactive waste in repositories located in deep geological formations, to mention some of the most acute contamination sources. In all these cases, management means making decisions to achieve goals without violating specified constraints. In order to enable the planner, or the decision maker, to compare alternative modes of action and to ensure that the constraints are not violated, a tool is needed that will provide information about the response of the system (the aquifer) to various alternatives.

Book Information

Series: Theory and Applications of Transport in Porous Media (Book 2)

Paperback: 414 pages

Publisher: Springer; Softcover reprint of the original 1st ed. 1987 edition (September 30, 1987)

Language: English

ISBN-10: 1556080158

ISBN-13: 978-1556080159

Product Dimensions: 6.3 x 1 x 9.4 inches

Shipping Weight: 1.2 pounds (View shipping rates and policies)

Average Customer Review: 5.0 out of 5 stars 1 customer review

Best Sellers Rank: #865,241 in Books (See Top 100 in Books) #54 inÃ Â Books > Engineering & Transportation > Engineering > Civil & Environmental > Environmental > Groundwater & Flood Control #79 inÃ Â Books > Engineering & Transportation > Engineering > Civil & Environmental > Earthwork Design #193 inÃ Â Books > Engineering & Transportation > Engineering > Civil &

Environmental > Hydrology

Customer Reviews

`... the book will undoubtedly prove to be valuable asset to anyone using groundwater models or making decisions based on such models.' EOS, November 1988. `This is a book that will be of great use to teachers, researchers, and practitioners in groundwater.' Hydrological Sciences Journal `This is a fine book that deserves a place on the shelf of any geotechnical engineer who uses numerical mathematical modeling to analyze problems of groundwater flow and transport.' A. Freeze in the Canadian Geotechnical Journal, Vol. 25, 1988.

This book presents theory and practice of groundwater and pollution flow simulation. It has thirteen chapters. Its first seven chapters contain theoretical information related to general porous media fluid flow along with mathematical models for flow in aquifers, seawater intrusion, unsaturated flow, and groundwater pollution. The last six chapters present numerical methods for solving the models developed in the theoretical chapters. There are special emphases for finite difference and finite element methods with BASIC`s programs for steady and unsteady pressure equations. It also contains chapters with BASIC's programs for convection-diffusion equations. This book is self-contained and it explains the most important deterministic techniques to simulate fluid flow in groundwater and pollution problems. It is a classic book in the subject and it deserves five starts.

and Asymmetric Flow Field Flow Fractionation: Powerful Tools for the Characterization of Polymers, Proteins and Nanoparticles Flow and Contaminant Transport in Fractured Rock Characterization of Porous Solids and Powders: Surface Area, Pore Size and Density (Particle Technology Series) Electrochemistry of Porous Materials Freight Forwarding and Multi Modal Transport Contracts (Maritime and Transport Law Library) ASTNA Patient Transport: Principles and Practice, 4e (Air & Surface Patient Transport: Principles and Practice) ASTNA Patient Transport - E-Book: Principles and Practice (Air & Surface Patient Transport: Principles and Practice) Advanced Transport Phenomena: Fluid Mechanics and Convective Transport Processes (Cambridge Series in Chemical Engineering)