

INTERNATIONAL CENTRE FOR MECHANICAL SCIENCES

COURSES AND LECTURES - No. 364



ADVANCED METHODS FOR
GROUNDWATER POLLUTION
CONTROL

EDITED BY

G. GAMBOLATI
UNIVERSITY OF PADUA

AND

G. VERRI
FRIULI VENEZIA GIULIA REGION



SPRINGER - VERLAG



WIEN NEW YORK

CONTENTS

	Page
Preface	
Are We Describing Dispersion Correctly? Some Concerns <i>by I. Neretnieks</i>	1
Using the Volume Averaging Technique to Perform the First Change of Scale for Natural Random Porous Media <i>by D. Bernard</i>	9
Block Iterative Strategies for Multiaquifer Flow Models <i>by G. Gambolati and P. Teatini</i>	25
Modeling Variably Saturated Flow Problems Using Newton-Type Linearization Methods <i>by C. Paniconi and M. Putti</i>	45
Finite Element Modeling of Saltwater Intrusion Problems with an Application to an Italian Aquifer <i>by M. Putti and C. Paniconi</i>	65
Modified Eulerian Lagrangian Method for Flow and Transport in Heterogeneous Aquifers <i>by S. Sorek and S. Lumelsky</i>	85
Random Walk Modelling Application to Contaminant Transport in the Unsaturated Zone <i>by I.F. Kontur</i>	103
Solving Groundwater Management Problems Using a New Methodology <i>by G.P. Karatzas and G.F. Pinder</i>	115
The Groundwater and the Groundwater Quality Management Problem: Reliability and Solution Techniques <i>by T. Tucciarelli</i>	131
Some Considerations About Uniqueness in the Identification of Distributed Transmissivities of a Confined Aquifer <i>by M. Giudici, G. Morossi, G. Parravicini and G. Ponzini</i>	149

Verification of Active and Passive Ground-Water Contamination Remediation Efforts <i>by M.J. Barcelona</i>	161
Design of Ground Water Monitoring Quality Networks <i>by J.C. Tracy, T.J. Van Lent and M.A. Mariño</i>	177
A Systematic Approach to Designing a Multiphase Unsaturated Zone Monitoring Network <i>by S.J. Cullen, J.H. Kramer and R.T. Ogg</i>	197
Applications of Time-Domain Reflectometry Techniques to Field-Scale Tracer Testing in Unsaturated Sediments <i>by D.L. Rudolph and P. Ferré</i>	217
Groundwater Pollution Control in Fractured and Karstified Rocks <i>by M. Veselic</i>	235
Hydrodispersive Parameters Estimation in Groundwater Control and Validation Models <i>by S. Troisi</i>	245
Methods for Restoring Aquifers <i>by U. Maione</i>	265
Hydraulic Isolation of Uncontrolled Waste Disposal Sites <i>by M. Nawalany</i>	279