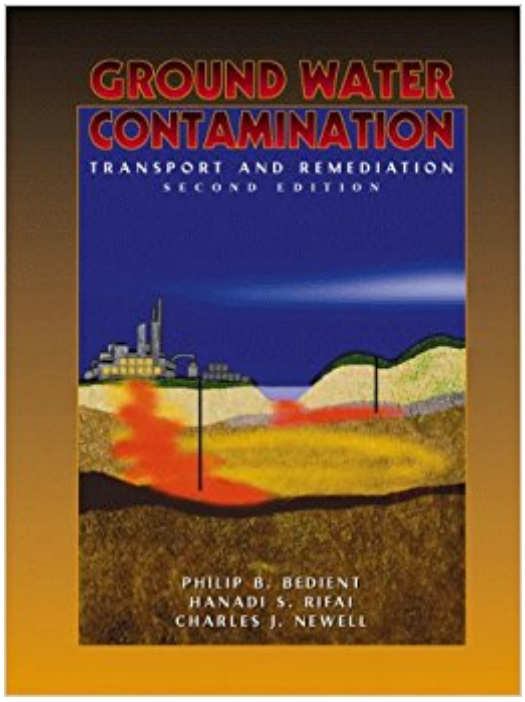
Ground Water Contamination: Transport And Remediation (2nd Edition)



Synopsis

Intended for hydrogeologists, engineers, and college students in those or related fields, this updated edition discusses the theory and practice of ground water contamination modeling and remediation. New coverage includes a full chapter on sorption, biodegradation, and natural attenuation processes

Book Information

Paperback: 604 pages

Publisher: Prentice Hall; 2 edition (September 18, 1999)

Language: English

ISBN-10: 0130138401

ISBN-13: 978-0130138408

Product Dimensions: 6.9 x 1.3 x 9.1 inches

Shipping Weight: 2.2 pounds (View shipping rates and policies)

Average Customer Review: 3.2 out of 5 stars 9 customer reviews

Best Sellers Rank: #344,038 in Books (See Top 100 in Books) #24 inÂ Books > Engineering & Transportation > Engineering > Civil & Environmental > Environmental > Groundwater & Flood Control #84 inÂ Books > Engineering & Transportation > Engineering > Civil & Environmental > Hydrology #172 inÂ Books > Textbooks > Engineering > Environmental Engineering

Customer Reviews

Unlike other volumes on the subject -- which focus on the geology of groundwater -- this text/reference takes an engineering approach. --This text refers to an out of print or unavailable edition of this title.

PREFACEThe 1970s ushered in a new decade of environmental awareness in response to major air pollution and water quality problems throughout the country. One of the primary missions of the newly formed Environmental Protection Agency (EPA) was to define, maintain, and protect the quality of the nation’s surface waters and subsurface aquifers. The field of environmental engineering was in its infancy, but hydrologists, civil and environmental engineers, hydrogeologists and other scientists were needed to provide the necessary expertise and engineering designs for water pollution control of surface waters.By the late 1970s, the discovery of hazardous wastes at sites such as Love Canal in New York, the Denver Arsenal in Colorado, and a number of chlorinated organics sites in California and Arizona ushered in a new era in hazardous waste site problems. In

the early 1980s, a large number of major disposal sites were discovered associated with industrial and military practices. These sites had been in place for decades. As a result, literally thousands of studies of active and abandoned waste sites and spills were conducted, as required by Resource Conservation and Recovery Act (RCRA) and the Superfund legislation administered by EPA, all designed to protect ground water quality (Chapter 14). During this time, hydrogeologists and consulting engineers were collecting samples, characterizing geology, analyzing data, and remediating hazardous waste sites with respect to ground water contamination. More than 1500 hazardous waste sites were eventually placed on the National Priorities List and thousands of other sites still remaining to be cleaned up. By 1985, leaking underground fuel tanks became one of the most ubiquitous of all subsurface contamination issues. In addition, chlorinated hydrocarbon sites were recognized as some of the most difficult to remediate due to the presence of newly discovered non-aqueous phase liquids (NAPLs). But as these sites and others were being investigated and remediation systems were being designed and installed across the country, it became clear by 1989 that many of these systems were not working to cleanup aquifers to drinking water standards. By the early 1990s, EPA and the National Research Council found that the nation was wasting large sums of money on ineffective remediation systems, such as pump and treat (see Chapter 13). Along with the maturing of environmental engineering and related ground water fields in the eighties, attention to hazardous waste problems has greatly expanded the scope and emphasis of traditional ground water investigations. Contaminant transport in the subsurface is of paramount importance and encompasses physical, chemical, and biological mechanisms which affect rates of migration, degradation, and ultimate remediation. In the nineties, many of the these complex transport mechanisms were evaluated at actual field sites or in supporting laboratory studies.After all of the efforts spent on analyzing and remediating soluble contaminant plumes, scientists and engineers in the nineties and beyond 2000 must be prepared to deal with more complex problems. These include source zone areas with non-aqueous phase liquids (NAPLs), residual oils, and vapors in the unsaturated zone. LNAPLs, which float on the water table, and DNAPLs, which sink to the bottom of an aquifer, can leach contamination for decades to shallow ground water aquifers. Specialized remediation schemes, which might involve a variety of methods for a mixture of chemicals, must now be evaluated in complex ground water settings. The old concept of simply pumping out the contaminated ground water does not effectively work to return an aquifer to useful condition. Rather, new and emerging methods and models must be considered in order to address and possibly control complex NAPL source zones. The second edition of our textbook has been written to better address the scientific and engineering aspects of subsurface contaminant transport

and remediation in ground water. This book contains traditional emphasis on site characterization and hydrogeologic evaluation, but with an orientation to the engineering analysis and modeling of complex field problems, compared to other texts written primarily for hydrogeologists. The current text is a departure from past efforts in that it is written from both a theoretical and practical viewpoint with engineering methods and transport theory applied directly to hazardous waste site investigation. Entire chapters are included on biodegradation, soil vapor transport, contaminant transport modeling, and site remediation. A number of new case studies have been added that illustrate the various evaluation schemes and emerging remediation techniques. This second edition is designed for hydrologists, civil, environmental, and chemical engineers, hydrogeologists, and other decision makers in the ground water field who are or will be involved in the evaluation and remediation of the nation's ground water. However, the field of ground water contamination has changed rapidly in recent years (since 1994) as new remediation techniques are being researched in laboratories and at many field sites nationwide. Any modern student of the topic must keep a watchful eye on the literature, which reports both results and breakthroughs on a monthly basis. We hope this text will provide the fundamentals for understanding and incorporating new approaches into the more traditional methods developed in site investigations of the past two decades. The legal framework of ground water legislation under RCRA and Superfund has provided significant guidance and funding for many of the ground water studies which have been performed to date. These comprehensive legal instruments set into motion an entire industry devoted to the identification, characterization, and remediation of hazardous waste sites throughout the U.S. As a result of billions of dollars allocated for remedial investigations and studies in the past 20 years, thousands of engineers and scientists now form the core of the ground water and remediation industry. During this time, college and university programs quickly added ground water flow and transport courses to their traditional fields of civil and environmental engineering and geology. And professional groups, such as the Assn. of Ground Water Scientists and Engineers, saw their memberships grow in response to the challenge of education and technology transfer. Our new revision was written in response to the tremendous demand in the college classroom and in the environmental industry for a modern engineering approach to ground water contamination problems of the nineties and beyond. Any practicing hydrologist or engineer today must understand mechanisms of ground water flow (Chapters 2 and 3), sources of contamination (Chapter 4), site investigations (Chapter 5), and contaminant transport (Chapters 6 and 7). In addition, biodegradation (Chapters 7 and 8), modeling approaches (Chapter 10), NAPL impacts in source areas and plumes (Chapters 11), natural attenuation (Chapter 12), and emerging remediation

schemes (Chapter 13) are covered. In the second edition, Chapters 4, 7, 8, 9, 11, 12, and 13 have been completely rewritten to better reflect current trends and ideas. Many new examples and case studies have been added based on emerging methods from the current literature, A new chapter on natural attenuation and risk assessment has been added, along with detailed discussions of emerging remediation methods such as surfactant and co-solvent soil flushing for sites contaminated with residual oils. The organization is described in more detail in Chapter 1.

It is very disappointing that such an expensive book has such a bad quality. Pages are falling from the book in massive amounts. This is not a cheap book to have that poor quality.

Half of the figures in the book are so blurry you can’t even read them! I’ve never seen a textbook of such piss poor quality.

This is a textbook I needed for class, and I was expecting a bit of wear and tear when it came. Instead, I got a book that was practically new with only a very sparing number of pencil markings and a couple dog-eared pages. Even the corners of the cover were in really good condition, which is not necessarily guaranteed with hardcovers.

This book is fantastic!

If I can speak for myself and my classmates,We have taken a graduate level contaminant groundwater class at one of the City University of New York branches throughout the last semester. As a group of students that actually read through books and work out problem sets that are provided, we were baffled to see all of the typographical, graphical, and equation errors that abound throughout. How can a book that is supposed to be used by people in groundwater professions not have a scientific editor go through it with a fine toothed comb? In this case, any comb would have been adequate to spot the errors. At a certain level in the sciences, professionals turn to reference texts that will aid them through certain problems. Equations that are crucial for modeling contaminant transport are definitely not made for memorization. Unfortunately, this book has fundamental problems with these equations and will never be part of my professional library. We thought we ran into a short barrier when we found errors in the beginning of the class. We then realized that we were to be plagued by grotesque errors throughout. Save your ninety dollars and buy something by Fetter. Or at least burn this when you are done highlighting and correcting. Better

yet, wait for the revised third edition.

I teach a course at the University of Oklahoma on the topic of this text. Actually, colleagues and I published a now outdated text on the same subject in the early 90s. I compared this text with other available texts and selected it to replace our own volume. While not perfect (what textbook is) I found this revised edition to be a valuable introduction to the subject. I liked the way it covers not only the fundamental processes governing fate and transport but also has sections discussing the applied aspects of the subject (remediation, characterization, etc.). The authors have taken great effort to make sure the updated version is very current -- I can especially speak to this in the specific areas of my research. Admittedly, I did supplement the text in certain areas, but I do this with every class I teach (and did it with our own text). And different professors supplement on different topics in keeping with their personal interests. Based on my experience with the text, and feedback from students, I definitely plan to use it again.

I teach a graduate course in groundwater contaminant transport each year, and I have used several texts in the last 15 years. The latest edition of Bedient et al. is the best current overall reference for this course. Few texts mention characterization and remediation at the same level of detail, and this text has the most complete presentation of analytical transport solutions with problems that demonstrate their use. In my course I stress application of computer modeling tools (which I must provide separately), but this text provides a fine foundation to my students' physical and chemical understanding of the available models.

Where do i start. the MANY TYPOS, not enough information, bad layout, not enough examples and very complicated problems. not a clue on how to solve poor explanation... a lot of words & you don't get enough information on the topic at the end! & for that price, are you kidding me? literally; THE WORST i have ever seen.

Gardens: The Quick and Easy Way to Crystal Clear Water (Water Garden Masters Series Book 5) Fruit Infused Water - 80 Vitamin Water Recipes for Weight Loss, Health and Detox Cleanse (Vitamin Water, Fruit Infused Water, Natural Herbal Remedies, Detox Diet, Liver Cleanse) Environmental Engineering: Water, Wastewater, Soil and Groundwater Treatment and Remediation (v. 1) Water-Quality Engineering in Natural Systems: Fate and Transport Processes in the Water Environment Dangerous Doses: A True Story of Cops, Counterfeiters, and the Contamination of Americaâ ™s Drug Supply Handbook of Radioactive Contamination and Decontamination (Studies in Environmental Science) Allegories of Contamination: Pier Paolo Pasolini’s Trilogy of Life (Toronto Italian Studies) Guidelines for Air and Ground Transport of Neonatal and Pediatric Patients, 4th Edition 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) The Transport System and Transport Policy: An Introduction Nurse Neonatal Transport C-NPT: Practice Questions for the Neonatal Transport Nurse Exam Transport Nursing (CTRN) Review (Certification in Transport Nursing Book 1)