

# Contents

Series Editor's Foreword by Jeffrey J. McDonnell	v
<b>Introduction</b>	1
<b>A Establishing Fundamentals</b>	9
Foundation Paper	
<b>Darcy, H.</b> (1856) Determination of the laws of water flow through sand. From: <i>The Public Fountains of the City of Dijon, Appendix D – Filtration</i> . Excerpt taken from Section 2 of <i>Appendix D on Natural Filtration</i> , 455–459, and including Figure 3 from Plate 24. Translated from the French by Patricia Bobeck. Kendall/Hunt Publishing Company, Iowa, USA.	9
A1 <b>Meinzer, O. E.</b> (1928) Compressibility and elasticity of artesian aquifers. <i>Economic Geology</i> 23, 263–291.	
A2 <b>Theis, C. V.</b> (1935) The relation between lowering of the piezometric surface and rate and duration of discharge of a well using ground-water storage. <i>Transactions of the American Geophysical Union</i> 16, 519–524.	
A3 <b>Jacob, C. E.</b> (1940) On the flow of water in an elastic artesian aquifer. <i>Transactions of the American Geophysical Union</i> 21, 574–586.	
A4 <b>Hubbert, M. K.</b> (1940) The theory of ground-water motion. <i>Journal of Geology</i> 48, 785–944. Excerpts: p. 785–803, 924–930, 941–944.	
A5 <b>Barenblatt, G. I., Zheltov, Iu. P. &amp; Kochina, I. N.</b> (1960) Basic concepts in the theory of seepage of homogeneous liquids in fissured rocks (strata). <i>Journal of Applied Mathematics</i> 24(5), 1286–1303. (This journal is a translation of the journal PMM, <i>Prikladnaya Matematika/Mekanika</i> , published by the Russian Academy of Sciences; this article first appeared in PMM 24(5), 852–864).	
A6 <b>Bredehoeft, J. D.</b> (1967) Response of well-aquifer systems to earth tides. <i>Journal of Geophysical Research</i> 72(12), 3075–3087.	
A7 <b>Poland, J. F. &amp; Davis, G. H.</b> (1969) Land subsidence due to withdrawal of fluids. In: <i>Reviews in Engineering Geology</i> , vol. II (ed. by D. J. Varnes), 187–268. Geological Society of America, Boulder, Colorado, USA. Excerpts: p. 187, 190–198, 201, 238–252, 262–268.	
<b>B Determining Parameters</b>	
B1 <b>Hantush, M. S.</b> (1960) Modification of the theory of leaky aquifers. <i>Journal of Geophysical Research</i> 65, 3713–3725.	
B2 <b>Stallman, R. W.</b> (1965) Steady one-dimensional fluid flow in a semi-infinite porous medium with sinusoidal surface temperature. <i>Journal of Geophysical Research</i> 70(12), 2821–2827.	
B3 <b>Cooper, H. H. Jr, Bredehoeft, J. D. &amp; Papadopoulos, I. S.</b> (1967) Response of a finite-diameter well to an instantaneous charge of water. <i>Water Resources Research</i> 3(1), 263–269.	

## Contents

- B4 **Neuman, S. P.** (1972) Theory of flow in unconfined aquifers considering delayed response of the water table.  
*Water Resources Research* 8(4), 1031–1045.  
With: Neuman, S. P. (1973) Supplementary Comments.  
*Water Resources Research* 9(4), 1102–1103.
- B5 **Neuman, S. P. & Witherspoon, P. A.** (1972) Field determination of the hydraulic properties of leaky multiple aquifer systems.  
*Water Resources Research* 8(5), 1284–1298.
- B6 **Neuzil, C. E.** (1986) Ground water flow in low-permeability environments.  
*Water Resources Research* 22(8), 1163–1195.

## C Flow System Analysis

- C1 **Theis, C. V.** (1940) The source of water derived from wells.  
*Civil Engineering* 10(5), 277–280.
- C2 **Back, W.** (1960) Origin of hydrochemical facies of ground water in the Atlantic Coastal Plain.  
In: 21st International Geological Congress, Copenhagen. Report, Part 1, 87–95.
- C3 **Tóth, J.** (1963) A theoretical analysis of groundwater flow in small drainage basins.  
*Journal of Geophysical Research* 68(16), 4795–4812.
- C4 **Freeze, R. A. & Witherspoon, P. A.** (1967) Theoretical analysis of regional groundwater flow. 2. Effect of water-table configuration and subsurface permeability variation.  
*Water Resources Research* 3(2), 623–634.

## D Parameter Uncertainty

- D1 **Freeze, R. A.** (1975) A stochastic-conceptual analysis of one-dimensional groundwater flow in nonuniform homogeneous media.  
*Water Resources Research* 11(5), 725–741.
- D2 **Marsily, G. de, Lavedan, C., Boucher, M. & Fasanino, G.** (1984) Interpretation of interference tests in a well field using geostatistical techniques to fit the permeability distribution in a reservoir model.  
In: *Geostatistics for Natural Resources Characterization* (ed. by G. Verly, M. David, A. G. Journel & A. Marechal), 831–849. NATO ASI (Advanced Science Institutes) Series C, vol. 122, part 2. D. Reidel Publ. Co., Dordrecht, The Netherlands.

## E Interaction with Surface Water

- E1 **Kohout, F. A.** (1960) Cyclic flow of saltwater in the Biscayne aquifer of southeastern Florida.  
*Journal of Geophysical Research* 65(7), 2133–2141.
- E2 **Johannes, R. E.** (1980) The ecological significance of the submarine discharge of groundwater.  
*Marine Ecology Progress Series* 3, 365–373.
- E3 **Meyboom, P.** (1966) Unsteady groundwater flow near a willow ring in hummocky moraine.  
*Journal of Hydrology* 4, 38–62.

## Contents

- E4 **McBride, M. S. & Pfannkuch, H. O.** (1975) The distribution of seepage within lakebeds.  
*US Geological Survey Water Resources Investigation Report 23-75*, 505–512.
- E5 **Lapham, W. W.** (1989) Use of temperature profiles beneath streams to determine rates of vertical ground-water flow and vertical hydraulic conductivity.  
*US Geological Survey Water-Supply Paper 2337:35*. Excerpts: p. 1–15; 25–34.
- E6 **Harvey, J. W. & Bencala, K. E.** (1993) The effect of streambed topography on surface–subsurface water exchange in mountain catchments.  
*Water Resources Research* 29(1), 89–98.

## F Contaminant Processes

- F1 **Konikow, L. F. & Bredehoeft, J. D.** (1974) Modeling flow and chemical quality changes in an irrigated stream–aquifer system.  
*Water Resources Research* 10(3), 546–562.
- F2 **Baedecker, M. J. & Back, W.** (1979) Hydrogeological processes and chemical reactions at a landfill.  
*Ground Water* 17(5), 429–437.
- F3 **Wilson, J. T., McNabb, J. F., Balkwill, D. L. & Ghiorse, W. C.** (1983) Enumeration and characterization of bacteria indigenous to a shallow water-table aquifer. *Ground Water* 21(2), 134–142.
- F4 **MacFarlane, D. S., Cherry, J. A., Gillham, R. W. & Sudicky, E. A.** (1983) Migration of contaminants in groundwater at a landfill: a case study. 1. Groundwater flow and plume delineation.  
*Journal of Hydrology* 63(1/2), 1–29.
- F5 **Schwille, F.** (1985) Migration of organic fluids immiscible with water in the unsaturated and saturated zones.  
In: *Proceedings of the Second Canadian/American Conference on Hydrogeology, June 1985* (ed. by B. Hitchon & M. Trudell), 31–35. NGWA, Dublin, Ohio, USA.

## G Dispersion and Heterogeneity

- G1 **Slichter, C. S.** (1905) Field measurements of the rate of movement of underground waters.  
*US Geological Survey Water-Supply Paper 140*. Excerpt: p. 16–25.
- G2 **Skibitzke, H. E. & Robinson, G. M.** (1963) Dispersion in ground water flowing through heterogeneous material.  
*US Geological Survey Professional Paper 386-B*, B1–B3 and Plate 1.
- G3 **Dagan, G.** (1987) Theory of solute transport by groundwater.  
*Annual Reviews of Fluid Mechanics* 19, 183–215.
- G4 **Haggerty, R. & Gorelick, S. M.** (1995) Multiple-rate mass transfer for modeling diffusion and surface reactions in media with pore-scale heterogeneity.  
*Water Resources Research* 31(10), 2383–2400.

