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Nota di contenuto	Intro -- Book_5078_C000 -- Half Title -- Title Page -- Copyright Page -- Contents -- Preface -- Acknowledgments -- Book_5078_C001 -- Chapter 1 : Introduction -- 1.1 Purpose and Scope -- 1.2 Background -- 1.3 Occurrence and History of Subsidence -- 1.4 Problems Resulting from Subsidence -- References -- Book_5078_C002 -- CHAPTER 2 : Subsidence Processes -- 2.1 Compaction Caused by Fluid Extraction -- 2.1.1 Extraction of Pore Fluids -- 2.1.2 Groundwater -- 2.1.3 Hydrocarbons -- 2.1.4 Geothermal Fluids -- 2.2 Hydrocompaction -- References -- Book_5078_C003 -- Chapter 3 : Aquifer Mechanics and Land Subsidence due to Groundwater -- 3.1 Theory of Aquifer-System Compaction -- 3.1.1 Principle of Effective Stress -- 3.1.2 Aquifer-System Compressibility and Storage Concepts -- 3.1.3 Theory of Hydrodynamic Consolidation -- 3.2 Stress Causing Aquifer-System Compaction -- 3.2.1 Static Stresses -- 3.2.2 Dynamic Stresses -- 3.3 Stress-Strain Relationship in Susceptible Aquifer Systems -- 3.3.1 Stress-Strain Analysis -- 3.3.2 Compressibilities of Clays and Sands from Tests in the Lab and Field -- References -- Book_5078_C004 -- CHAPTER 4 : Identification, Measurement, Mapping, and Monitoring -- 4.1 Ground-Based Geodetic Surveys -- 4.1.1 Precise Differential

Leveling -- 4.1.2 Global Positioning System -- 4.1.3 Other Techniques for Measuring Land-Surface Change -- 4.1.4 Extensometry -- 4.1.4.1 Single and Double Pipe Borehole Extensometers -- 4.1.4.2 Anchored-Cable and Free-Pipe Extensometers -- 4.1.4.3 Slip Joints -- 4.1.4.4 Telescopic Extensometer -- 4.1.4.5 Extensometer Records -- 4.1.5 Tripod-Mounted LiDAR -- 4.1.6 Other Techniques of Subsurface Measurement -- 4.1.6.1 General -- 4.1.6.2 Casing-Collar Logging -- 4.1.6.3 Radioactive-Marker Logging -- 4.1.6.4 Inclinometers. 4.2 Airborne and Spaced-Based Geodetic Surveys -- 4.2.1 LiDAR -- 4.2.1.1 Data Density -- 4.2.1.2 Geodetic Control -- 4.2.1.3 Quality Assurance/Quality Control -- 4.2.2 Synthetic Aperture Radar Interferometry -- 4.3 Horizontal Displacement -- References -- Book_5078_C005 -- CHAPTER 5 : Subsidence Analysis and Simulation -- 5.1 Empirical Methods -- 5.2 Quasi-Theoretical Approach -- 5.2.1 Wadachi ' s (1940) Model -- 5.2.2 Subsidence as a Function of Liquid Extraction -- 5.2.3 Ratio of Subsidence to Head Decline -- 5.2.4 Clay Content-Subsidence Relation -- 5.2.5 Depth-Porosity Model -- 5.3 Theoretical Approach -- 5.3.1 Aquitard Drainage Model -- 5.3.1.1 Conventional Groundwater Flow Theory -- 5.3.1.2 Simulation of the Aquitard Drainage Model -- 5.3.2 Poroelasticity Model -- 5.3.2.1 Poroelasticity Theory -- 5.3.2.2 Simulation of the Poroelasticity Model -- 5.3.3 Other Constitutive Models -- 5.3.4 Other Types of Subsidence Models -- 5.3.4.1 Simple Subsidence Estimates -- 5.3.4.2 Influence of Material within the Unpumped Overburden -- References -- Book_5078_C006 -- CHAPTER 6 : Methods to Mitigate Subsidence Caused by Groundwater Withdrawal -- 6.1 Reduction in Groundwater Withdrawal -- 6.2 Artificial Recharge of Aquifer Systems -- 6.3 Case Histories of the Methods Used -- 6.3.1 Shanghai, China -- 6.3.2 Venice, Italy -- 6.3.3 Japan -- 6.3.4 United States -- References -- Book_5078_A001 -- Appendix A -- Standards Used for Laboratory Tests and Field Sampling for Properties of Sediments in Subsiding Areas -- A.1 General Need of Tests -- A.2 Field Sampling -- A.3 Composite Logs of Core Holes -- A.4 Methods of Laboratory Analysis -- A.4.1 Particle-Size Distribution -- A.4.2 Hydraulic Conductivity -- A.4.3 Unit Weight -- A.4.4 Specific Gravity of Solids. A.4.5 Porosity and Void Ratio -- A.4.6 Water (Moisture) Content -- A.4.7 Atterberg Limits -- A.4.7.1 Liquid Limit -- A.4.7.2 Plastic Limit -- A.4.8 Consolidation -- A.5 Results of Laboratory Analyses -- A.5.1 Particle-Size Distribution -- A.5.1.1 Sediment Classification Triangles -- A.5.1.2 Statistical Measures -- A.5.2 Hydraulic Conductivity -- A.5.3 Specific Gravity, Unit Weight, and Porosity -- A.5.4 Atterberg Limits and Indexes -- A.5.5 Consolidation -- A.5.5.1 Estimation of the Compression Index -- A.5.5.2 Correlation of Compression Indexes -- A.5.5.3 Estimation of the Coefficients of Consolidation -- A.5.5.4 Effect of Soil Classification -- A.5.5.5 Relationship between Consolidation Characteristics and LLs -- A.5.6 Relationships between Soil-Engineering and Hydrogeologic Terms and Concepts -- A.5.6.1 Pore Volume -- A.5.6.2 Moisture Content -- A.5.6.3 Compressibility -- References -- Book_5078_A002 -- Appendix B : Notations, Symbols, and Glossary -- B.1 Notations and Symbols -- B.2 Glossary -- References -- Book_5078_A003 -- Appendix C -- Conversion Table -- Book_5078_IDX.

Sommario/riassunto

Investigation of Land Subsidence due to Fluid Withdrawal provides a detailed overview of the occurrence and control of land subsidence due to fluid withdrawal.

