IN PRINT

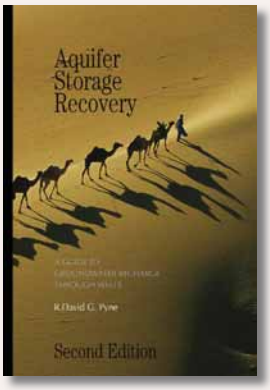
Aquifer Storage Recovery: A Guide to Groundwater Recharge Through Wells (2nd Ed.)

by R. David G. Pyne, ASR Systems, $158

*Reviewed by **Adam Hutchinson** – Orange County Water District*

As we all know, in the Southwest and many places elsewhere in the country and around the world, there is a pressing need to more efficiently utilize our water resources to meet ever-growing demands. Aquifer storage recovery (ASR), the use of dual-purpose wells to recharge and later recover stored water from aquifers, is a valuable addition to our arsenal of tools to achieve greater efficiencies in the use of water resources.

In *Aquifer Storage Recovery: A Guide to Groundwater Recharge Through Wells*, author R. David Pyne, with contributions from leading experts, has presented a comprehensive look at the current body of knowledge on ASR. The book presents the building blocks of an ASR program, including a feasibility study, pilot testing, well and wellfield design, well equipment, well plugging and redevelopment, water quality changes, and geochemistry. Non-technical issues such as ASR economics, water rate impacts, legal and regulatory issues, and public involvement are also covered. Alternative ASR applications that are addressed include surface water storage, riverbank filtration pretreatment, reclaimed water storage and aquifer thermal energy storage. Nineteen case studies are presented, of which 17 are updates from the first edition, which was published in 1994. These updates provide an interesting retrospective view of what has and has not worked and how some ASR projects have morphed into projects that have different objectives from those originally intended. In the final chapter, the author looks to the future to discuss water philosophy, regulatory and management issues, growth management, and global applications of ASR.



The strength of the book is that it presents the bulk of current ASR knowledge in one volume. When the first edition was published, only 18 ASR systems were operating in the United States. By the writing of this second edition in 2005, the number had increased to 72. As a result, the second edition incorporates many lessons learned during the expansion of ASR over the past 11 years.

Weaknesses of the book include its length (608 pages) and lack of flow. Many topics are touched on multiple times, but the redundancy can be useful if one uses the book as a reference to seek information on a topic of interest. However, the book can be difficult to read due to the lack of flow and discontinuities in style, likely due to the multiple sources and contributors to the book.

Professionals who currently are or plan to be involved with ASR will find this book most useful. In the academic realm, it could serve as a good optional reference for university courses covering one of the many areas touched by ASR.

Overall, *Aquifer Storage Recovery* does an admirable job covering the myriad facets of this technology. But even with this volume as a reference, this topic is difficult to cover. As the book states, "The probability of successfully implementing an ASR program is enhanced by assembling a multi-disciplinary technical team that includes a balance of engineers and hydrogeologists, with capabilities in the areas of geochemistry, hydrogeology, water treatment processes, utility operations, hydraulics, aquifer simulation modeling, economics, water chemistry, and design of wells, pipelines, pumping stations, and related elements of a water utility system." As this list shows, there are so many areas of expertise required for this technology, a multidisciplinary team approach to ASR is necessary. What this book does is to provide teams involved in ASR and potential users of ASR with enough information to ask the right questions to navigate a course to a successful ASR program.

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