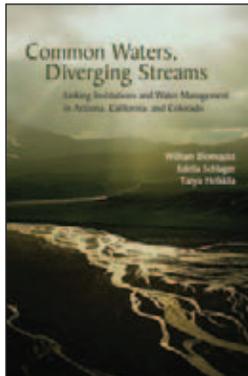


Common Waters, Diverging Streams: Linking Institutions and Water Management in Arizona, California and Colorado

by William Blomquist, Edella Schlager, and Tanya Heikkila. RFF Press, \$30.95 (pbk).

Reviewed by **Jim Holway, Ph.D.** – Assistant Director, Arizona Department of Water Resources

Common Waters is a timely and informative study of conjunctive water management at a time of increasingly scarce water resources. Conjunctive management involves coordinating the utilization of different water sources. Whether for balancing seasonal peaks in supply and demand, maintaining surface water flows, ensuring reliability during drought, freeing up resources to meet environmental needs, or securing supplies for additional growth, the authors advocate the benefits of conjunctively managing our varied water supplies.



Common Waters focuses on one aspect of conjunctive use: underground storage of surplus surface waters through direct and in-lieu groundwater recharge. The authors' stated goal was to describe and document existing projects in Arizona, California, and Colorado and improve understanding of how institutional changes relate to incentives to engage in more efficient water use.

Part 1 provides an excellent overview of the advantages of conjunctive management as well as the opportunities and obstacles to implementing conjunctive management for different water sources. Hydrologic and institutional characteristics cited as facilitating conjunctive management include: clear specification of water rights; uniform rules for all sources of water; ability to conserve water without losing rights; transferability of water supplies and rights; clear rights to recover stored water and protection of those supplies from other users; the ability to cooperate on financing

projects and assessing fees; and having large aquifers with significant storage space and the infrastructure to move surplus water.

Part 2 contains a valuable summary of the three states' water resources and institutional frameworks. The authors were particularly intrigued by 1) Arizona's state-imposed groundwater management policies, 2) Colorado's watershed-level system of water governance, and 3) California's decentralized system of local special districts.

The authors conclude that, "California's basin by basin decentralized approach may make it harder to initiate conjunctive management projects, but it does not inhibit the size or longevity of those that emerge." In each of the twelve California basins with projects included in the study, some form of locally initiated, basin-wide groundwater governance had been implemented to facilitate conjunctive management. A principal purpose of many of the projects, some of which have been operating since the 1920s, is to accommodate seasonal peaking and overdraft recovery.

In Arizona, the last of the three states to develop recharge projects, excess Central Arizona Project (CAP) water is the principal source of supply. Recharge is done principally 1) to meet state regulatory requirements for an assured water supply, or 2) to firm CAP supplies through the Arizona Water Banking Authority. The state's quantified water rights system, requirements for an assured water supply, and 1986 statutory amendments provide a regulatory framework to facilitate recharge projects.

Unlike California or Arizona, the principal purpose of Colorado's projects initially was to maintain surface water flows during peak demand times while allowing continued use of tributary groundwater. Recharge projects are operated near major rivers in eastern Colorado so

that recharge returns to the river during low flow periods and ensures sufficient supplies for senior surface water rights holders. More recently, Colorado has expanded conjunctive management projects to meet interstate river compacts and federal environmental requirements for specified flows. Colorado has an institutional framework within which water appropriators are encouraged to govern themselves; state-maintained water courts facilitate this process.

Part 3 contains recommendations for improved conjunctive use of water in the three states. Recommendations include:

In California, establish a system of specific and transferable water rights; clarify rights for underground storage and recovery; revise health regulations to facilitate effluent recharge; and establish a statewide database on conjunctive management projects.

In Arizona, revise statutes to facilitate multi-jurisdictional financing of projects; facilitate conjunctive management in rural communities; and devise clearer rules for sub-basin management.

In Colorado, fully integrate tributary groundwater and surface water, allowing withdrawals from groundwater storage during shortages, even when it depletes surface water flows, then replacing the groundwater during times of excess.

Common Waters is a thoroughly researched, well-presented, and thoughtful analysis of the history and future of recharge and recovery of surplus surface water in three western states. However, true conjunctive management is much broader than that. Reflecting on this book, I believe that in Arizona – and elsewhere – research, development of hydrologic models, and long-range planning are needed to optimize the role conjunctive management can play in our water supply portfolios and to understand the limits of recharge or of pumping and replenishment, in meeting long-term water supply needs.

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