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Evolution of the Policies Surrounding Ground and Surface Water Management in the West

Barbara Cosens

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INTRODUCTION

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Groundwater accounts for up to 97% of the liquid fresh water in the United States.[1] The United States Geological Survey (USGS) estimated that in the United States 79.6 billion gallons of groundwater were withdrawn per-day in 2005 for uses ranging from domestic to irrigation to thermoelectric power generation, amounting to over 20% of total freshwater withdrawal.[2] Globally, 475 billion gallons of groundwater are withdrawn daily.[3] Although humankind has relied on artesian sources of groundwater from time immemorial, extraction at modern levels capable of depleting the resource only became possible with the coincidence of our understanding of aquifers, advanced drilling and pumping technology, and rural electrification beginning in the 1950s.[4] Currently this coincidence of scientific knowledge, technology, and economics outpaces our legal and institutional approaches to water management in many parts of the world. Western states are struggling to catch up as aquifers decline. One of the more complex aspects of this effort, from both the legal and scientific viewpoints, is the management of groundwater that is connected to surface water–referred to as "conjunctive management." Because water allocation is a matter of state or tribal law in the United States, each state or tribe can take a different approach to solving this problem, and in doing so, can tailor that solution to its unique geology, economics, and values. At the same time, governments can also learn from both the successes and failures of the others. Likewise, analysis of the various approaches may also provide models for use globally.

The Fall 2010 and upcoming Symposium Edition of the *Idaho Law Review* are dedicated to bringing together legal scholars and practitioners, water managers, and scientists from numerous western states to explore the topic: One Source: Evolution of the Policies Surrounding Ground and Surface Water Management in the West. Bringing this dialogue to Idaho is of particular importance as the state moves forward with its first major experiment in conjunctive management applied to the Eastern Snake Plain Aquifer. The aquifer supports about 50% of southern Idaho's irrigated agriculture, most of its aquiculture, and is the sole source of drinking water for 300,000 people.[5]

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1. Gabriel Eckstein & Amy Hardberger, *State Practice in the Management and Allocation of Transboundary Groundwater Resources in North America*, 18 Y.B. OF INT'L ENVTL L. 96, 96 (2007).

2. JOAN F. KENNY ET AL., U.S. DEP'T OF THE INTERIOR, U.S. GEOLOGICAL SURVEY CIRCULAR 1344, ESTIMATED USE OF WATER IN THE UNITED STATES IN 2005 1 (2009).

3. S.S.D. Foster and P.J. Chilton, *Groundwater: The Processes and Global Significance of Aquifer Degradation*, 358 PHIL. TRANSACTIONS OF THE ROYAL SOC'Y, 1957, 1957 (Nov. 5, 2003), http://rstb.royalsocietypublishing.org/content/358/1440/1957.full.pdf+html?sid=54aa513c-7e40-4fc0-90d7-35fac0313e69.

4. *Id.*

5. *The Eastern Snake River Plain Aquifer*, DEP'T OF ENVTL. QUALITY, STATE OF IDAHO OVERSIGHT MONITOR, May 2005, at 1, *available at* http://www.deq.idaho.gov/inl_oversight/library/newsletter_0505.pdf.

In the fall 2010 Edition, Justice Hobbs of the Colorado Supreme Court begins our look at state approaches by describing Colorado's efforts in conjunctive management through its court-based system of water allocation. Next, Professor Rachael Pascal Osborne focuses on the highly technical analysis that must occur to understand the impact of groundwater pumping on instream flow. She uses efforts in Washington to illustrate the inherent complexities. Professor Lawrence MacDonnell tells us that while Wyoming statutes allow for conjunctive management, the implementation process resulted in a presumption that ground and surface water are not connected. Limited development has not tested the results if this presumption is overcome, but increasing population growth suggests that this test is on the horizon. Attorneys Michael Creamer and Jeff Fereday explore the difficult intersection of conjunctive management and urbanization. They offer alternatives to curtailment in application of this issue to the rapidly urbanizing Treasure Valley of Idaho. Recognizing that our understanding of surface and ground water models will require the use of models, hydrologist and environmental scientist Dr. Daniel Luecke looks at the *Daubert* standard governing admission of such evidence in court. He recommends the addition of the American Society for Testing and Materials (ASTM) documentation criteria to the *Daubert* checklist as the first step in improving the criteria for admission. However, he notes that experts with competing models will nevertheless be able to meet this standard. Rather than leave the choice between competing models to the court, he recommends the use of a third-party expert in an arbitration setting to resolve differences between competing models. The 2010 Fall Edition also includes two student comments by the student organizers of the symposium. Natural Resources and Environmental Law (NREL) emphasis and Water Resources concurrent degree student, Dylan Hedden-Nicely explores the question of what constitutes waste in the context of a highly connected surface and ground water system. He asserts that we should consider the possibility of evaluating efficiency on a system-wide as opposed to individual water right basis to take into account that water is reused once recharged to the aquifer. NREL student Emmi Blades looks at the rising voice of Native Americans in water management. She uses examples of assertion of treaty rights to the beds and banks of a water body and treatment-as-state under the Clean Water Act by the Coeur d'Alene Tribe and the Confederated Salish and Kootenai of the Flathead Reservations to gain a seat at the table in water management.

The symposium volume continues the work of the previous edition by exploring a variety of approaches to groundwater and conjunctive management in the western states. Analyses focus on Idaho, New Mexico, Utah, California, and Native American water rights. Hydrologist with the University of Idaho and Idaho Water Resources Research Institute, Dr. Gary Johnson looks at how the hydrologic complexity of surface and groundwater interaction poses a problem for management under the doctrine of prior appropriation. Application to Idaho's Eastern Snake Plain Aquifer illustrates that the absence of a 1:1 correlation between groundwater pumping curtailed and surface water gains may lead to much higher reductions in groundwater use than expected in a surface water system. Attorney John Ruple uses Utah's experience to describe the complex questions and policy determinations that must be answered in both conjunctive management and interstate groundwater management. Professor Judith Royster expands our state-centered view to consider Native American water rights. She points out that the lack of a coherent body of

law regarding reserved rights to groundwater has led to differences in resolution of those rights in each state. These differences, including denial of reserved rights to groundwater in some states, pose barriers to any future efforts by tribes to integrate surface and groundwater management. Professor Barton Thompson looks more broadly at a variety of approaches to conjunctive management to raise the next issue: impacts on ecosystems. He calls for integrated resource management to address this problem. Professor Denise Fort looks at the problem of groundwater mining. Professor Fort asserts that the absence of long-term planning is apparent in the reliance of major population centers in New Mexico on declining aquifers. In another view from New Mexico, Josh Mann, Special Assistant Attorney General at New Mexico's Interstate Stream Commission, examines the results of failure to consider conjunctive management in entering and implementing the Pecos River Compact between New Mexico and Texas. This failure led to costly litigation and resolution when groundwater pumping in New Mexico reduced surface water deliveries to Texas.

This two volume series provides a valuable resource for anyone seeking to manage ground and surface water as a single resource. The Fall 2010 and Symposium Editions are a tribute to the hard work of the organizers, Emmi Blades and Dylan Hedden-Nicely, their colleagues at the *Idaho Law Review*, and the continued dedication of the University of Idaho, College of Law to serving the State of Idaho and the West.