

Robert McConnell is professor of geology at Mary Washington College, Fredericksburg, Virginia. He earned his Ph.D. at the University of California, Santa Barbara.

Toward a 'Water Ethic'

A Book Review by Robert McConnell

LAST OASIS: FACING WATER SCARCITY

By Sandra Postel
W. W. Norton and Company, 1992
240 pp., \$9.95

Last Oasis is the third book in the Worldwatch Environmental Alert Series, whose author, Sandra Postel, is Vice-President for Research at the Worldwatch Institute. It is refreshing to note that she is also a trained scientist, having studied geology at Wittenburg University. She is thus able to integrate more fully the technical nature of groundwater reserves and management with the social, demographic, and political aspects of global water supplies.

She begins (in an appropriately named chapter, "An Illusion of Plenty") with an engrossing comparison between the lifestyles of inhabitants of two desert communities, each receiving an annual precipitation of about 7" per year—Lodwar, Kenya and Phoenix, Arizona. In Lodwar, children trudge for hours to procure a few liters of water; in Phoenix, golf courses and swimming pools form a striking contrast to the sere, barren hills surrounding the metropolis. The contrast in water use could not be more striking: an "average" family in Phoenix uses almost 800 gallons of water per day, a similar one in Lodwar less than 40 gallons per day—barely sufficient for basic needs of washing, cooking, drinking and rudimentary sanitation.

(I can't resist an aside: as an educator, the data in the book provide numerous examples which would make marvelous "critical thinking" exercises for college and high school students. For example, the Phoenix family's backyard swimming pool loses 25 percent of its water annually from evaporation in the searing summer heat and vanishingly low humidity, an amount which could fulfill the Lodwar family's meager needs for nearly *six months*, based on Postel's figures.)

In the introductory chapter, Postel makes the point that masking water scarcity (as in Phoenix) is a major reason, if not *the* major reason, for mammoth and invariably environmentally degrading, engineering-based water "development" schemes. She then lays out the principal conclusions of the book, each of which is developed and justified in the three following sections.

In Part I, she asserts that development schemes — built to enhance economic "growth," increase agricultural production, and the like — invariably degrade the environment by, among other things, damming streams and thus destabilizing and often destroying riverine ecosystems, by deforesting watersheds and by mining and

polluting groundwater. At the international level, they often reduce the security of adjoining nations and thus may lead to regional conflicts, especially in the tinderbox of the Middle East.

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In Part II, she develops, with well-documented and referenced case studies, the theme that water conservation strategies for agriculture, industry, commerce, and domestic use are always more environmentally benign than mammoth water development schemes, and are almost invariably more cost-effective as well.

And in Part III, "Toward Water Security," she illustrates in a similar fashion how the "economics" of water development schemes and pricing of water often bear little relation to true cost, and discusses the irrationality of water subsidies.

Finally, in the third section, she states and develops a "Water Ethic."

The book is filled with valuable data and important case studies. A few will illustrate:

- By 2000, a third of Africa's population will reside in water-short countries, many of which are also among that continent's fastest growing in population. Egypt, for example, receives virtually no rainfall and has one of the world's fastest-growing populations — it is entirely dependent upon the goodwill of neighboring Sudan for water from the upper Nile. It is also one of the major recipients of U.S. foreign aid.
- Saudi Arabia is frantically mining groundwater to produce subsidized wheat, which they could purchase on the world market at one-fourth their own cost of production. They have recently joined the ranks of the world's major wheat exporters.
- Libya is spending much of its oil wealth on a scheme to mine groundwater in the Sahara and pump it hundreds of kilometers to the more populated north. The water supplies are projected to last only 40-60 years.
- China is facing growing water scarcity: at least 100 cities and towns have experienced shortages in the past decade. A third of Beijing's municipal wells are

believed to have gone dry. With China's frenetic drive for economic "growth," this shortage can only worsen, and will probably yield two results with ominous repercussions for the planet and the United States. First, the demand is sure to grow for more dams and reservoirs, which will further degrade China's majestic river systems. And second, the numbers of Chinese who will seek to emigrate to the United States claiming "political asylum" may well reach staggering proportions.

In a chapter devoted to water demand in agriculture, the author observes that agricultural production may have peaked worldwide. This suggests that pressure will grow to "develop" nature reserves, migratory wildfowl routes and major wetlands for agriculture to feed the relentlessly growing human population, especially in Africa.

The author describes the impact of water scarcity on regional stability, especially in the Middle East. Postel shows how competition for water among Arab States and Israel, all of which have mushrooming populations, may fuel the next Middle East war. She points out that Turkey's control of the upper Euphrates may pose a similar threat, that Egypt's national security is "entirely in the hands of the eight other countries in the Nile Basin" in the words of once Foreign Minister and now U.N. Secretary-General Boutros-Ghali, and that relations between Bangladesh and India are becoming increasingly strained over the use of the Ganges.

In a significant and hopeful chapter, she illustrates numerous cost-effective water conservation schemes which could alleviate, at least for decades, potential regional water conflicts and depletion of scarce supplies at the national level. Many nations reward water use, however, and penalize frugality, by pricing water far below true cost. For example, California's Central Valley corporate farmers are provided heavily subsidized "federal" water which is often used to grow surplus crops. This has caused, among other things the destruction of the Sacramento Delta-San Francisco Bay's fishing industry, and threatens the entire ecosystem with collapse. The problem can only grow more intense as California's population continues to grow at Third World rates.

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And Postel illustrates the significant water savings that are possible with conservation of municipal wastewater. While many nations already encourage using treated effluent to irrigate crops, there are abuses, and at least one has direct implications for the United States. As politicians weigh approval of the North American Free

Trade Agreement (NAFTA)

...irrigation districts outside Mexico City apply raw sewage from this huge metropolis to their fields. One district in the southwestern state of Hidalgo receives about 3.5 million cubic meters [over 750 million gallons, greater than the late summer flow of the Potomac River (reviewer's note)] of raw sewage each day. Although farmers are prohibited from using this water to irrigate crops that are consumed raw, the prohibition is apparently not always respected or enforced. Some vegetables have been found to be highly contaminated with fecal coliforms, posing a direct threat to human health.

In a final section, "Toward Water Security," she illustrates how environmental economics, or indeed common sense, is often stood on its head by water development schemes and water pricing. In one of the most telling studies of the book, she points out that Thailand's Ubolratana Dam was completed in 1965, with the catchment area 90 percent forested. But by 1985, forest cover was below 40 percent, due primarily to the resettlement there of people displaced by the rising waters behind the dam! This has naturally accelerated erosion rates, not to mention species loss, such that now the useful storage area and thus the life of the reservoir has been sharply reduced. Such cases are all too frequent, and illustrate the futility and destructiveness of building giant dams and reservoirs. However, Postel notes without comment that construction begins on an average of 170 dams worldwide each year.

Finally, the author suggests that much of the problem with water use is rooted in economics: for example, there is no way in traditional economics to value the environmental benefits secured when water is left *in* rivers. In her words: "[e]conomic incentives and regulations [must be] adopted that promote conservation and efficiency instead of waste and profligacy." But on a larger point, she argues that a great deal of our water problems stem from a "disconnect" between our own destiny and the survival of the "water world around us." Our goal, our "water ethic," should be to make the preservation of water ecosystems central to all human activity. Of course, to do this would ultimately mean a brake on our relentlessly growing global population, and a revision of our notion of "standard of living": it requires, after all, 50 metric tons of water to produce one metric ton automobile.

Only this preservation, and not efficiency and conservation schemes, will guarantee water security, and thus global security, into the 21st century. ■