

Southwest HYDROLOGY

The Resource for Semi-Arid Hydrology

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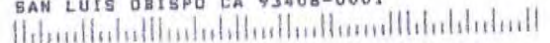
Water Projects
Writ Large

Southwest Hydrology
University of Arizona - SAHRA
P.O. Box 210158-B
Tucson, AZ
85721-0158

Address Service Requested

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Pros and Cons of Desal Detailed

Desalination may soon live up to its original hype and become a viable part of the nation's water future, says a report from the National Research Council (NRC).

Because 97 percent of water on Earth is either seawater or brackish groundwater, desalination has the potential to greatly increase the amount of water usable for drinking and irrigation. However, the

high energy costs of desalination—10 times the energy of traditional surface water treatment—and potential environmental impacts of the process have stymied the industry's growth.

Recent technological improvements have lowered the costs of desalination, while other schemes to augment water supply have only become more expensive. This has made desalination economically viable, although the report

cites the need for more research to further lower costs and energy use.

Meanwhile, environmental concerns related to the process are far from resolved. Desalination may be no more harmful than, say, diverting water from sensitive ecosystems, the report said, but this is a prime area for research. So are the impacts of salt concentrate disposal in rivers and seas; the extent to which fish get trapped in intakes; and ecological monitoring related to the desalination plants themselves.

Regarding environmental issues related to energy use and greenhouse gas emissions, the report suggests that desalination plants use alternative energy sources such as the sun, wind, and tides. Most current desalination technologies use reverse osmosis, which forces water through a membrane to separate out the salts. Improving the permeability of the membrane or pretreating the water might also reduce energy use, but reductions are not likely to be more than 15 percent.

Other research should be devoted to finding cheaper, environmentally friendly ways to dispose of the brine and further the development of thermal desalination—a technique using low-grade, leftover industrial heat that has potential to lower energy use even more.

Desalination currently generates 0.4 percent of the water used in the United States, representing 40 percent growth in the industry from 2000 to 2005. The NRC report recommends that the White House Office of Science and Technology Policy coordinate the research, with \$25 million per year in funding plus additional contributions by the private sector, which has been funding the majority of the nation's desalination research.

Despite the ambitious research plan and positive outlook, the report notes that water conservation and transfers are likely to remain cheaper water resource options.

"Desalination: A National Perspective" is available at www.nap.edu.

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