

Here Today, Gone Tomorrow?

NGWA Initiatives on Groundwater Sustainability

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In the next 20 years, entire states or localities across the nation will likely experience groundwater shortages, if they have not already. What's more, fundamental data necessary for policymakers to make informed decisions regarding the use and management of groundwater are currently lacking in many areas, thus impeding efforts to head off shortages.

For several years now, members of the National Ground Water Association (NGWA) have identified groundwater sustainability as the most pressing groundwater-related issue. But concern about water sustainability is not restricted to groundwater professionals. The 108th Congress passed several bills aimed at addressing water sustainability issues. Prior to adjourning in October, Congress passed the Homeland Security 2005 Appropriations Bill which included billions of dollars for drought relief. The California Bay-Delta Restoration program (CALFED), which includes funds for feasibility studies for four water storage projects, also was passed in October. Congress was unable to reach final passage of the Water Resources Development Act, but the measure will be resurrected in the 109th Congress.

Policy leaders in Washington, D.C. are acutely aware of the need for water management policies, from addressing water contamination by chemicals such as MTBE and perchlorate to infrastructure needs and water rights issues. NGWA is working to educate government officials with respect to these issues.

NGWA's Regional Ground Water Management Task Force is gathering benchmark data and viewpoints from groundwater professionals to determine what federal actions would be most helpful in the area of groundwater management.

As part of these efforts, the task force has issued a white paper, a call to action, and a bibliography on groundwater sustainability. Collectively, these documents are aimed at nonprofessionals who are interested in learning more about groundwater sustainability issues. The complete documents are available at the NGWA web site, www.ngwa.org/ngwainwashington/environmental.shtml.

In the white paper, the Task Force identified the following key contributors to groundwater shortages:

Population Growth and Distribution Patterns

High population growth rates in arid and semi-arid areas and the urbanization of America have a direct impact on the balance of supply and demand of our nation's groundwater resources. The largest census-to-census growth took place

from 1990 to 2000, with an increase of 32.7 million people. Arid western states experienced the fastest growth rate in the nation, at 19.7 percent, during that period.

Contamination or the Presumption of Contamination

California provides an example of how contamination or the presumption of contamination can contribute to groundwater shortages. The California Department of Health Services reported that perchlorate has been detected in more than 300 public supply sources and an equally large number of private homeowner wells. Also, in portions of the Southwest, Northeast, and Midwest, arsenic occurs naturally in groundwater at levels that exceed the recently lowered drinking water standard of 10 parts per billion. According to the Arizona Department of Environmental Quality, approximately one-third of Arizona water systems exceed the arsenic standard.

SURVEY RESULTS

Information Most Readily Available (top 5 of 13 - ranked from most to least available)

NATIONAL SURVEY ⁱ	ARIZONA SURVEY ⁱⁱ	NEW MEXICO SURVEY ⁱⁱⁱ
Statewide aquifer maps	Statewide aquifer maps	Hydraulic properties of all major aquifers
Water quality for all aquifers	Consumptive use of groundwater	Statewide aquifer maps
Hydraulic properties of all major aquifers	Groundwater level monitoring network	Consumptive use of groundwater
Groundwater level monitoring network	Groundwater use data	Artificial recharge opportunities
Groundwater use data	Hydraulic properties of all major aquifers	Groundwater flow models

Most Important Types of Data Needs (top 6 items from a list of 12 items in order of importance)

NATIONAL SURVEY ⁱ	ARIZONA SURVEY ⁱⁱ	NEW MEXICO SURVEY ⁱⁱⁱ
Accurate groundwater use data	Groundwater level monitoring network	Consumptive use of groundwater
Water quality for all aquifers	Groundwater quality monitoring network	Accurate groundwater use data
Hydraulic properties of major aquifers	Statewide aquifer maps	Hydraulic properties of major aquifers
Groundwater level monitoring network	Artificial recharge opportunities	Water quality for all aquifers
On-line aquifer data	Hydraulic properties of major aquifers	Groundwater quality monitoring network
Groundwater recharge rates	Potential artificial recharge rates	On-line aquifer data

ⁱ Survey of NGWA members nationwide, November 2003, 76 respondents ⁱⁱ Survey of NGWA members in Arizona, July 2004, 19 respondents
ⁱⁱⁱ Survey of NGWA members in New Mexico, July 2004, 19 respondents

Increasing Efforts to Protect and Enhance In-Stream Flow and Aquatic Ecosystems

Concerns that groundwater withdrawals can negatively affect aquatic ecosystems by reducing in-stream flows could lead to limits on groundwater extractions. Conversely, surface water withdrawals or the lining of irrigation channels may adversely impact groundwater replenishment. Because it is impossible to use a natural resource without having some effect on it, zero impact is neither a possible nor desirable goal. However, by understanding the linkages between groundwater and other water-dependent natural resources, we can make informed decisions and sustainable compromises.

Recharge Variability

Groundwater resources and recharge rates vary locally and regionally. In areas such as the Southwest, groundwater currently being withdrawn entered the aquifer as recharge thousands of years ago during a wetter climate.

Current Water Infrastructure System Design

Today's drinking water infrastructure often involves centralized, large-scale groundwater withdrawals. In regional systems, the extracted groundwater may be piped miles away from the original withdrawal point. Even in some rural areas and small communities, we are moving away from individual or small drinking water and wastewater systems that largely maintain the water within the local groundwater system. NGWA contends that water infrastructure system design must consider impacts on the natural water system.

Surveys on Sustainability

As part of NGWA's efforts to promote groundwater sustainability, the organization has been surveying NGWA members and state geologists. The national surveys are being followed by more specific state surveys.

The tables at left summarize some results of the national, Arizona, and New Mexico surveys conducted to date. National survey

respondents believe the three most useful actions the federal government can take to help meet states' information collection gaps and advance state water management goals are to increase federal funding for cooperative groundwater quantity data collection, groundwater quality data collection, and mapping of aquifers.

The groundwater professionals also overwhelmingly agreed that: states should get involved in groundwater sustainability issues (90 percent); consideration of resource renewability is a key to groundwater sustainability (87 percent); and man-made water infrastructure systems should be developed and designed with greater consideration for their impacts on the natural water systems (84 percent).

Survey respondents are split as to whether they believe it should be permissible to treat groundwater as a commodity to buy, sell, and transport outside the basin.

The issue of water availability will be examined further at the Ground Water Summit, hosted by the Association of Ground Water Scientists and Engineers (AGWSE), a division of NGWA, April 17-20, 2005 in San Antonio, Texas. Visit www.ngwa.org.

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