

## Central Valley Hydro Model, Report Available

Groundwater Availability of the Central Valley Aquifer, California—Central Valley Hydrologic Model

U.S. Geological Survey

This report and model are the products of an investigation begun in 2005 to evaluate and project groundwater conditions resulting from present and planned land-use changes in California's Central Valley. The research is one of 30 regional

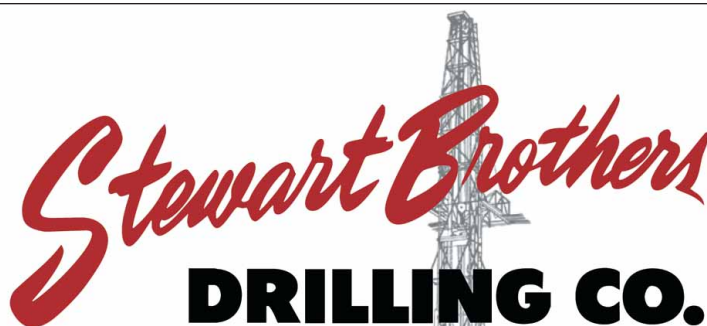
aquifer studies the USGS is conducting nationwide.

The three-dimensional hydrologic model (built using MODFLOW 2000) was designed to encompass the valley's entire groundwater basin. It contains 20,000 cells one-square-mile in size and ten layers ranging in thickness from 50 to 1,800 feet. To help construct the model, scientists reviewed more than 8,500 drillers' logs dating to the early 1900s, and monthly surface-water and groundwater data from 1962 to 2003.

The model was designed to help resource agencies assess, understand, and address issues affecting the joint use of surface- and groundwater supplies in the Central Valley. Users can simulate water-management scenarios and assess possible changes in both groundwater and surface-water supplies. The model also can take into account the conversion of farmland to urban use and the potential future effects of climate change. Model files can now be downloaded for public use.

The report describes the model and its construction, and what has been learned to date (see page 34 for report summary).

The report and model files are available at [pubs.usgs.gov/pp/1766/](http://pubs.usgs.gov/pp/1766/).



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## New Concepts for Water System Management

Sustainable Water Systems: Step One – Redefining the Nation's Infrastructure Challenge

The Aspen Institute

In 2008 and 2009, the Aspen Institute convened the "Dialogue on Sustainable Water Infrastructure in the U.S.," a series of four meetings of leaders from the water utility industry; federal, state and local government regulators; and non-profit environmental groups. The goal was to develop policy recommendations addressing water infrastructure planning and management challenges for the future.

Three mandates emerged. First, the traditional definition of water infrastructure must evolve to embrace a broader, more holistic definition that includes manmade water- and wastewater infrastructure, as well as natural watershed systems. Second, this new definition should be embraced by public and private entities involved in water management, all of whom must ensure their decisions integrate environmental, economic, and social considerations. Finally, a watershed-based management approach is required for all water services to ensure integrated, sustainable management of water resources.

In the resulting report, the group recommended policy measures that support a financially and

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environmentally sound path towards a sustainable 21st-century water infrastructure. The appendix lists anticipated roadblocks and offers strategies for addressing each one.

The full report is available at [www.aspeninstitute.org/publications](http://www.aspeninstitute.org/publications).

## California Preparing for Climate Change 2009 California Climate Adaptation Strategy Discussion Draft

California Natural Resources Agency

California became the first state to develop a climate adaptation strategy with the August release of this document, which summarizes how climate change could impact the state and offers recommendations for managing specific threats. A 45-day public comment period followed the release, ending in mid-September.

Other state agencies involved in drafting the document include Environmental Protection, Business, Transportation and Housing, Health and Human Services, and the Department of Agriculture. The document focuses on seven different sectors: public health, biodiversity and habitat, ocean and coastal resources, water management, agriculture, forestry, and transportation and energy infrastructure. Rather than address the detailed impacts, vulnerabilities, and adaptation needs of each sector, those determined to be at greatest risk were prioritized.

Visit [www.climatechange.ca.gov/adaptation/](http://www.climatechange.ca.gov/adaptation/).

## ID Water Polluters Nationwide

Database of Water Pollution Violations

New York Times

This interactive website developed by the *New York Times* maps more than 200,000 facilities nationwide that have permits to discharge pollutants and indicates whether the sites have had any Clean Water Act violations. A table for each state lists the facility name, city, last inspection date, number of violations, and fines. Information was obtained from U.S. EPA and the California State Water Resources Control Board.

Visit [www.nytimes.com/toxicwaters](http://www.nytimes.com/toxicwaters).

## Hydromythology and the Ancient Greek World: An Earth Science Perspective Emphasizing Karst Hydrology

Cindy Clendenon, Finline Science Press (2009)

Reviewed by Richard J. Heggen - University of New Mexico

One might justify a *Southwest Hydrology* review of Cindy Clendenon's *Hydromythology and the Ancient Greek World* by noting that the American Southwest boasts its own karst formations, the most notable being New Mexico's Carlsbad Caverns. In a broader sense, however, Clendenon renews our tie to the roots of western civilization that most of us let slip after satisfying that long-ago undergraduate core curriculum hurdle. We were too anxious to get on to MODFLOW.

But let's be honest; the plot of the Theis equation doesn't come close to that of Homer's *Odyssey*. *O Brother, Where Art Thou?* about a differential equation might lack a compelling soundtrack. It's time to revisit some of our cultural roots.

An editor of the *Water Science Encyclopedia*, Clendenon holds a master's degree in environmental science and water resources, but the book's uniqueness isn't on the science side, properly presented but rudimentary. Clendenon's contribution lies in her thesis that the Mediterranean environment of disappearing and reappearing rivers and catastrophic geomorphology shaped the Western roots of the supernatural. Myth has genesis; in this case, one that's significantly hydrologic. The book catalogs Hellenistic mythology related to such phenomena as earthquake-triggered karst collapses, lake-swallowing sinkholes, sub-seabed freshwater transport, tsunamis, altered shorelines, and lakes of fire.

Few readers of *Southwest Hydrology* may care to scientifically deconstruct so many Greek sagas, but those of us who recall

*continued on next page*

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the tale of Charon, the boatman who eternally ferries departed souls across the subterranean River Styx (for a fee, of course), will immediately agree that the story is about karst—the dissolution route to hell, so to speak, though the diabolic concept of hell had yet to be developed when Charon began his duty. (Clendenon notes that today's Arcadian tourist-destination River Styx was yet later named and just flows to the sea.) Thales overestimated that water is the basis of all things, but Clendenon makes a compelling case that hydrology underpins many stories we perhaps thought baseless.

The strength of water resources as a discipline comes from its multidisciplinary nature. Isn't it time to welcome the classicists? Or the other way around, isn't it time for scholars of the humanities to acknowledge that earth science might provide some context? Here's the evidence: Given MODFLOW's CFP conduit flow module and requisite parameters, we could perhaps estimate

the velocity of the River Styx. It's more satisfying, however, to just read the book.

*The 520-page book is available for \$28 at [www.finelinesciencepress.com](http://www.finelinesciencepress.com).*

## Reports on EPA, State Compliance Status

### State Review Framework

U.S. EPA

In the past decade, the U.S. Environmental Protection Agency began conducting reviews of regions and states on a four-year cycle to evaluate Clean Water Act, Clean Air Act, and Resource Conservation and Recovery Act enforcement and compliance assurance programs. The reviews consider national and state data on enforcement, enforcement file reviews, commitments made in annual agreements, and discussions with senior management at the state and regional levels. If issues arise during the reviews, they are addressed collaboratively and agreed-upon measures will be implemented for future grant funding programming.

EPA completed the first round of reviews using protocol specified in the State Review Framework between 2004 and 2007; those reports are now available. The second round began in 2008 and is expected to be complete in 2012.

*Access the reports at [www.epa.gov/Compliance/state/srf/](http://www.epa.gov/Compliance/state/srf/).*

## Help for Natural Attenuation of Inorganics

### Site Characterization to Support Use of Monitored Natural Attenuation for Remediation of Inorganic Contaminants in Ground Water

U.S. EPA

This paper discusses at what stage in the site characterization process solid-phase characterization techniques should be implemented. It describes two case studies where results of these techniques were critical in determining whether monitored natural attenuation could be used for groundwater cleanup. The case histories concern an industrial complex in Massachusetts affected by arsenic,

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lead, and chromium; and uranium contamination in the vadose zone and unconfined aquifer at the Hanford site in Washington.

The November 2008 report is available at [www.epa.gov/nrmrl/pubs/600r08114/600r08114.pdf](http://www.epa.gov/nrmrl/pubs/600r08114/600r08114.pdf).

## Desal, Water Reuse Journal to Debut

### Journal on Desalination and Water Reuse

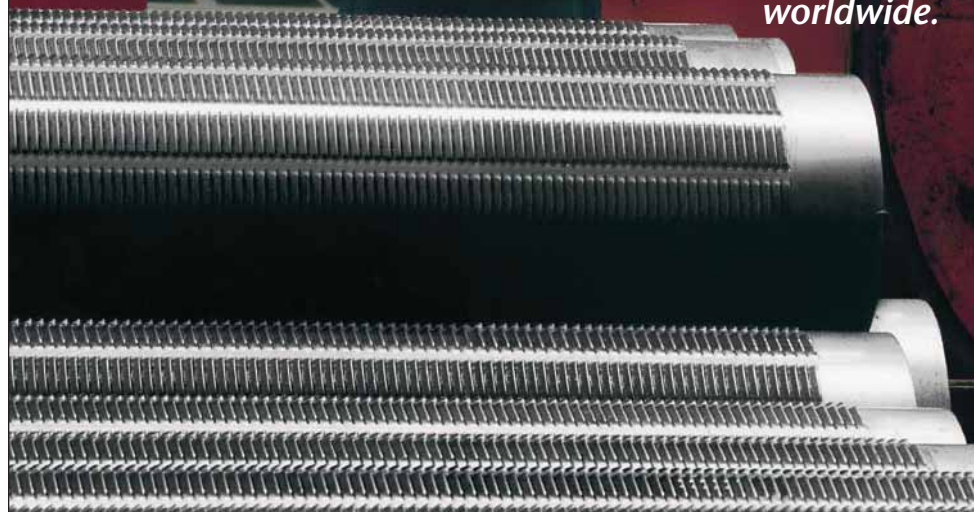
#### International Desalination Association

This new publication, planned for release at the 2009 World Congress in November, will include peer-reviewed articles on the technical and scientific aspects of desalination. It is co-published by the American Water Works Association. The quarterly journal will be available to IDA members as well as to individual and institutional subscribers in both print and electronic formats. ■

For information about IDA Journal contact Leslie Merrill at [lmerrill@idadesal.org](mailto:lmerrill@idadesal.org).

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<http://pubs.usgs.gov/of/2009/1196>

Excel spreadsheet tools for analyzing groundwater level records and displaying information in ArcMap, by Fred D Tillman  
<http://pubs.usgs.gov/tm/tm4f1>

Water Budgets of the Walker River Basin and Walker Lake, California and Nevada, by T.J. Lopes and K.K. Allander  
<http://pubs.usgs.gov/sir/2009/5157>

Data on mercury in water, bed sediment, and fish from streams across the United States, 1998-2005, by N.J. Bauch, L.C. Chasar, B.C. Scudder, P.W. Moran, K.J. Hitt, M.E. Brigham, M.A. Lutz, and D.A. Wentz  
<http://pubs.usgs.gov/ds/307>

Ground-Water Temperature, Noble Gas, and Carbon Isotope Data from the Española Basin, New Mexico, by Andrew H. Manning  
<http://pubs.usgs.gov/sir/2008/5200>

Modeling of Selenium for the San Diego Creek Watershed and Newport Bay, California, by T.S. Presser and S.N. Luoma  
<http://pubs.usgs.gov/of/2009/1114>

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