Inconvenient Hydrology?
A few thoughts about a good staff:

The value of our service equals the sum of our staff.

We are scientists, problem solvers, implementers. People who love what we do. Clear Creek Associates are a group of people whose collective expertise in groundwater-related projects in Arizona is unmatched. We’re dedicated to offering quality-focused, very responsive hydrologic services to clients throughout the Southwest.

We’ve built our reputation on a foundation of strong professional capabilities, finely honed project coordination and communication skills, and extensive statewide experience.

With each addition to our staff over the past six years, the value of our service has grown. You can find out more about our newest staff members, and other matters of interest, at our Web site, www.clearcreekassociates.com.

Offering comprehensive, hydrogeologic services in five integrated areas:

Groundwater Development — extensive knowledge of and experience with well drilling technology, borehole evaluation and well design, plus an Arizona well driller’s license

Groundwater Modeling — technical abilities combined with interpretive skill acquired through five decades of collective team experience in creating and interpreting models

Hydrogeologic Investigations — focused application of hydrogeological analyses to resolve groundwater issues, address regulatory concerns and water rights issues, or support water resources planning

Environmental Services — resolving problems in a cost effective and timely manner by integrating scientific, technical, analytical and legal capabilities, with proven relationships with regulators

Mining Support — clarifying communications, streamlining permitting, and helping companies develop positive relationships with environmental agencies

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Engineered for the controlled diffusive release of:
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Multilevel Systems

Multilevel systems provide groundwater samples from multiple depth-discrete levels (ports) optimizing the amount of information obtained in a single monitoring hole.

The Model 403 CMT® Multilevel System provides the simplicity and low cost of a bundle-type installation, with the benefits of backfilling or sealing around a single tube. The CMT offers low cost multilevel monitoring up to 7-zones in a single tube, with no joints. Fast installation ensures the hole is not left open to deteriorate or contaminate. The CMT System uses continuous polyethylene multichannel tubing which is custom-built on site with screened intervals at desired sampling zones. Reliable seals and sand packs can be placed around the single tube using standard backfill methods, or using pre-formed cartridges in the 3-Channel System.

The Model 401 Waterloo Multilevel System allows detailed groundwater monitoring from many zones in one borehole, without cross-contamination between monitoring zones. When a number of systems are used at one site, a detailed 3-dimensional picture can be obtained for a more accurate assessment of hydrogeological parameters. In 3” to 4” bedrock boreholes and pre-cased wells, Waterloo packers give permanent seals to isolate discrete zones. In overburden, Systems can be placed within pre-cased holes with packers, or installed using standard tremie placement of bentonite seals and sand packs.
Climate change is a hot issue these days. What is certain is that temperatures are increasing along with atmospheric carbon dioxide concentrations; changes in precipitation are less certain. In this issue we consider the impacts these changes might have on water resources in our region. The short answer? Warmer temperatures mean that less precipitation falls as snow and evapotranspiration rates increase. The clearest implication for water managers is that variability of water supplies will increase, and storage issues will become critical. This issue’s feature articles outline both the likelihood and uncertainty of where we may be headed.

Make plans to attend Southwest Hydrology’s upcoming symposium (sponsored jointly with the Arizona Hydrological Society) on “Sustainable Water, Unlimited Growth, and Quality of Life: Can We Have It All?” Among the specific issues we’ll address is whether current policy reflects water supply reality in the Southwest. Groups across the region are struggling with these and similar issues, and the conference is designed to compare and contrast various local, state, and regional perspectives. The symposium is Aug. 29-Sept. 1, 2007 in Tucson. We are now soliciting abstracts, sponsors, and exhibitors: see page 5 and visit the symposium website at www.watersymposium.org.

Thanks to all the contributors to this issue, as well as to our sponsors—both groups are essential to our continued success.

Betsy Woodhouse, Publisher
2007 Regional Water Symposium
CALL FOR ABSTRACTS

CALL FOR ABSTRACTS
DEADLINE: February 2, 2007
We seek abstracts in the following areas:

Resources
- Renewable supplies
- Water quality issues
- Riparian restoration/preservation
- Stormwater management

Policy
- Supplies for growth
- Valuing water resources
- Demand management
- Regulatory controls
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New Technologies for:
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- Remediation and wells
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- New water supplies - desalination, cloud seeding, water harvesting, etc.

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Aug. 29 - Sept. 1, 2007
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More info at:
www.watersymposium.org
How will climate change impact water resources? That’s the million-dollar question for water managers in the Southwest. As with any prediction about the future, we depend on past and present data, our understanding about how systems work, and models to forecast the range of likely future conditions. Measured and tree-ring-reconstructed streamflow data and ice cores tell us about climate-induced changes in the timing of runoff and the range of climate variability over centuries. Ecosystem investigations help us understand how plants respond to changes in atmospheric carbon dioxide and how such changes might affect land-use cover and, in turn, the hydrologic system. As for the models: what are they telling us, and how much confidence can we place in them? Can or should water managers respond to their predictions? Read on…

Climate Change Effects on Southwest Water Resources
Gregg Garfin and Melanie Lenart
How much do we really know about the impacts of climate change on water resources in the Southwest? What do historical and paleoclimate observations tell us? What are the strengths and weaknesses of climate model predictions? And what human factors bear on the equation?

Past Peak Water in the Southwest
Martin Hoerling and Jon Eischeid
Forty-two climate simulations were run on 18 different coupled ocean-atmosphere-land models to determine probable consequences of future climate change on Lees Ferry streamflow. It ain’t pretty.

Emerging State Policies on Climate Change
Jeanine Jones
States are increasingly setting their own climate change policies, mostly focused on two fronts: reducing greenhouse gas emissions and increasing adaptability to climatic extremes. California and Oregon are among the leaders.

Climate Change Through the Eyes of Water Managers
Betsy Woodhouse
Water managers throughout the Southwest share their strategies for addressing the impacts climate change may have on their systems. They offer a wish list of climate information that would help them better face the future.