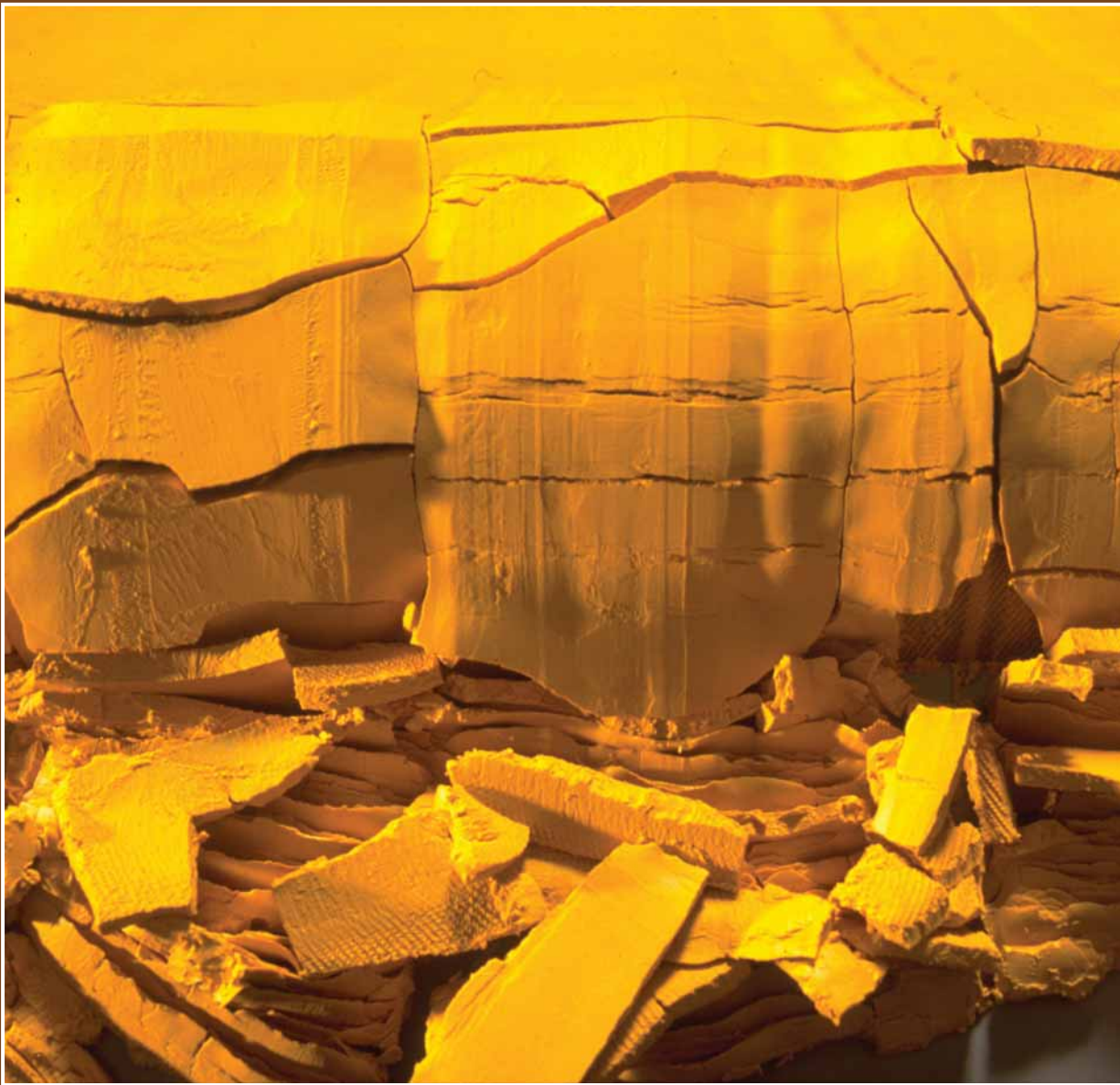


Southwest HYDROLOGY

The Resource for Semi-Arid Hydrology

Volume 7/Number 6

November/December 2008



Mining
Uranium

Southwest Hydrology
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Right from the beginning of our company nine years ago, Clear Creek Associates has sponsored and presented at professional events that benefit the hydrology and geologic sciences and promote professional dialogue.

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The very timely topics are "Changing Waterscapes and Water Ethics for the 21st Century" and "Global Geoscience Practice, Standards, Ethics, and Accountability."

*For more information, visit:
www.aipg.org/2008/AIPG-AHS-3IPGC.htm*

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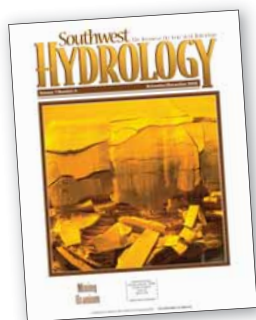
From the
Publisher

Whether you endorse or oppose mining uranium for nuclear energy, rising uranium prices and worldwide demand indicate the practice is on the upswing, and most U.S. deposits occur in the Southwest. Newspaper headlines in recent months describe numerous new mining claims, including in areas that encroach upon urban and national parklands, as well as ongoing threats to water quality from mining and milling operations that occurred decades ago. Uranium production likely is coming soon to an area near you.

Uranium production from the 1950s to the 1970s left a legacy of contaminated groundwater, surface water, and soils. The effects of tasteless, odorless radiation were not understood until after miners and users of the contaminated materials became seriously ill; only then were regulations for managing uranium production enacted. Now that uranium standards have been established, will the next uranium boom be any safer for humans and the environment? That remains to be seen. Some parties say yes, absolutely; others say no way. Finding a viewpoint that objectively weighs the advances in mining technology and protection of health and the environment against the inherent dangers of the handling of uranium proved impossible. But through this issue, we can become informed about what is involved, what has happened, and what might be different in the future.

We are pleased by the long list of contributors to this issue, making it truly a publication by and for the water professionals of the Southwest. Thanks to all of them, our eight 2008 sponsors (see page 9), and our 35 advertisers for providing the support that makes this issue possible.

Betsy Woodhouse, Publisher



After uranium is leached from ore, it is dried and filtered to produce yellowcake, an intermediate step in uranium ore processing, comprised of about 80 percent uranium. The photo shows yellowcake on a belt filter at a processing plant in France in 1995. Photo copyright AREVA Inc.

Correction

Costs of the California State Water Project and Central Valley Project were incorrectly reported on page 22 of the Sept/Oct 2008 issue of Southwest Hydrology. The correct figures are \$4.6 billion and \$3.4 billion, respectively.

Southwest Hydrology

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Editorial Contribution

Southwest Hydrology welcomes letters and contributions of news, project summaries, product announcements, and items for The Calendar. Send submissions by mail or email as shown below. Visit www.swhydro.arizona.edu for additional guidelines for submissions.

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Issue 5

INSIGHT ON ULTRA-LOW SEDIMENT FLOW PROVIDED BY ARGONAUT-ADV®

LOUISIANA, USA.

Louisiana's coastal wetlands provide vital wildlife habitat and a strong buffer against storms. But they are threatened by subsidence and cut off from the historic floods that built the Mississippi River Delta. Using SonTek Argonaut-ADVs®, a Louisiana State University team captured continuous streams of data on shallow, slow-moving currents (down to 1 mm/s) that are notoriously difficult to measure. Their findings are teaching stakeholders how releases of sediment-rich pulses of water through a diversion structure near New Orleans may be managed to help rebuild marshes while minimizing impacts on local fisheries.

> www.sontek.com/news/UltraLowFlow.pdf



ACOUSTIC DOPPLER TECHNOLOGY ENABLES FAST ASSESSMENT OF POST-QUAKE HYDRAULIC CONDITIONS



SICHUAN PROVINCE, China.

A 7.9 magnitude earthquake in China left millions homeless and susceptible to thirst and water-borne disease as it ravaged the country's hydrology monitoring stations. SonTek/YSI immediately responded with assistance and hydroacoustic equipment — allowing hydrologists to gauge the speed and strength of water flow, as well as monitor drinking water distribution. The advanced RiverSurveyor®



provided fast assessment of flood conditions and did in minutes what had taken hours for a field crew with conventional instruments.

> www.sontek.com/news/ChinaQuake.pdf

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A SMART WAY TO HANDLE FLOODS

KUALA LUMPUR, Malaysia.

Devastating floods are common in crowded Kuala Lumpur, necessitating the massive Stormwater Management and Road Tunnel (SMART) project. Because accurate and timely information on discharge and velocity are vital for success, 16 SonTek Argonaut-SL and Argonaut-SW current meters were required. Says Bruce Sproule, Greenspan Technology's International Manager, "SonTek equipment...was the easiest and most accurate to incorporate into this project. The support is good and the equipment reliable."

> www.sontek.com/news/SmartTunnel.pdf



The most common and widespread of the world's natural hazards is the flood.

According to UNESCO, these disasters strike about 150 times, impact 500 million lives, and create at least \$60 billion in damages — each year. Providing fast and reliable flow data under unpredictable conditions is serious business at SonTek. And making a difference anywhere in the world means our instruments have to be accurate, reliable, and capable under extreme conditions.

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Mining Uranium

Groundwater was involved in the formation of many large uranium ore deposits, and increasingly groundwater (fortified with other compounds) is being used to mine them using in-situ leaching methods. Uranium mining in the 20th century left a legacy of surface water and groundwater contamination that is still being dealt with today. Water quality standards for uranium were not enacted until after mining began, which means insufficient or no background data were collected to serve as baseline remediation goals. Love it or hate it (there doesn't appear to be a middle ground), uranium mining is on the increase in the Southwest.

18 Western Uranium Development: The Next Boom?

Clyde L. Yancey and Betsy Woodhouse
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30 Well-Field Mechanics for In-Situ Uranium Mining

Shao-Chih (Ted) Way
In-situ recovery of uranium deposits involves an underground flushing process that causes less environmental disturbance than conventional mining methods. Understanding the hydrogeology of a uranium formation is essential to determine the method's economic feasibility for a given deposit.

Publishing **Southwest Hydrology** furthers SAHRA's mission of promoting sustainable management of water resources in semi-arid regions.



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