Mining Uranium

Southwest Hydrology
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The UNIVERSITY of ARIZONA.
The Service of Science

The work of scientists is expected to be as objective as possible. Yet scientific knowledge emerges from a process shaped by human virtues, values, and limitations, and by the expectations of society, which wants to benefit from the work. This is where ethics enters into the discussion.

So what about the consulting scientist, who serves clients with vested interests? When we at Clear Creek Associates refer to the value of our staff, we’re speaking not only about a group of people whose collective expertise in groundwater-related projects in Arizona is unmatched—we’re also referring to the value of our scientific principles, grounded in our professional integrity.

And so in providing consulting services for our clients, our ethical standards as scientists remain uncompromised.

Our clients expect no less from us.
Levelogger Proven to be Worth its Weight in Gold

Mandate To Deliver Quality
Since the Levelogger Gold was launched at the beginning of 2006, Solinst has shipped thousands and thousands of units to satisfied customers all over the world.

“Our mandate is to design and deliver high quality products, and back it up with our 3 Year Warranty, demonstrating the Solinst commitment to our customers.”

— Sarah Belshaw, President

Dependable Water Level Datalogger
- Maintenance Free Design/Lifetime Calibration
- Backwards Compatible
- 3 Year Warranty
- Real-Time View
- User-selectable Sampling Schedule
- 10 Year Battery (1 reading/minute)
- SCADA Ready (SDI-12)

The Levelogger Gold is a self contained water level datalogger, which is completely designed, developed and manufactured in-house, in the tradition of all Solinst high quality products. The Levelogger Gold uses infra-red data transfer, providing the flexibility of installing by use of a simple wireline or by using a Direct Read Cable to surface. The Levelogger Gold includes a pressure transducer, temperature thermistor, 10 year lithium battery (based on 1 reading per minute), and internal data logger with a capacity of 40,000 temperature and water level data points.

Junior...
...the newest addition to the Levelogger Family

Reduce Your Bottom Line
A low cost alternative in the Levelogger Series
- Accuracy of 0.1% FS
- 32,000 Datapoints
- 5 Year Battery
- 1 Year Warranty
- Compatible with Levelogger Gold Series, Software and Accessories

Leveloader Gold
- Rugged Data Transfer Device
- Dedicated to Levelogger Series
- Stores 1.39 Million Datapoints
- Real-Time View
- Re-program in the Field

www.solinst.com
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.

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.

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

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.
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-ADV®, 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.

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.

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.”

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.
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.

Western Uranium Development: The Next Boom?
Clyde L. Yancey and Betsy Woodhouse
U.S. uranium production peaked in the 1970s, but record prices and growing demand in recent years has revived interest in uranium mining. What will be different this time around?

Uranium Geology of the West
Clyde L. Yancey and Virginia T. McLemore
Where in the West are uranium deposits found, and how did they form? Groundwater flow and geochemistry play key roles in the deposition of most types of ore bodies, as this hydrogeology primer describes.

Groundwater Remediation from Uranium Mining in New Mexico
Jerry Schoepner
Extensive uranium mining and milling in the Grants district of New Mexico predated modern environmental and health regulations. Groundwater remediation efforts have been complicated by many factors, including shifting uranium standards.

Finding Benchmarks at Uranium Mine Sites
Daniel W. Erskine and Cynthia Ardito
Ambrosia Lake Valley of New Mexico provides a case study of the challenges of remediating uranium mine sites. These include shifting groundwater flowpaths, water chemistry changes that accompany rewatering of the mine workings, and a lack of premining water quality benchmarks.