

## ***New Reports, Software from EPA***

**Acid Mine Drainage: Innovative Treatment Technologies** (October 2003, 52 pages). This document provides an overview of treatment technologies being used to remedy environmental problems at abandoned mine sites, with a focus on innovative treatment techniques. It was prepared by Christine Costello, a National Network of Environmental Management Studies grantee under a fellowship from the U.S. Environmental Protection Agency. Available at [clu-in.org/techpubs.htm](http://clu-in.org/techpubs.htm).

**ESTCP Cost and Performance Report: Application of Flow and Transport Optimization Codes to Groundwater Pump-and-Treat Systems** (CU-0010, January 2004, 45 pages). In this report, the Environmental Security Technology Certification Program evaluates the benefits and utility of applying transport optimization algorithms, operable on desktop computers, versus using a traditional trial-and-error approach. Applied to groundwater pump and treat (P&T) systems, transport optimization algorithms link mathematical optimization techniques with simulations of groundwater flow and contaminant transport to determine the best combination of well locations and pumping rates for a P&T system. These mathematical algorithms can contribute to long-term operating cost reduction and improved performance with respect to compliance objectives. View the report at [www.estcp.org/documents/techdocs/CU-0010.pdf](http://www.estcp.org/documents/techdocs/CU-0010.pdf).

**Technical and Regulatory Guidance for Using Polyethylene Diffusion Bag Samplers to Monitor Volatile Organic Compounds in Groundwater** (DSP-3, February 2004, 78 pages). This document, published by the Interstate Technology and Regulatory Council, provides a guide to the use of passive diffusion bag (PDB) sampling, particularly for long-term monitoring. It contains a set of sequenced questions for quick preliminary screening of a site's potential for PDB sampling. It

also discusses regulatory issues related to PDB use, considers potential regulatory impediments to the implementation of PDB sampling, provides suggestions for expediting the process, and reports on a survey of state regulators' acceptance of the technology. The final sections provide a cost model to estimate the potential savings associated with conversion to PDB monitoring and present some case histories of the technology's implementation. Available at [www.itrcweb.org/DSP-3.pdf](http://www.itrcweb.org/DSP-3.pdf).

**AQUATOX Release 2.** EPA's Office of Water has released an enhanced version of AQUATOX, a simulation model for aquatic ecosystems. The model is designed to help users evaluate and illustrate the causal links between the chemical and physical environment and living systems that inhabit surface waters by predicting the fate of pollutants and their effects on the ecosystem. While AQUATOX has been available for several years, the enhanced Release 2 allows a more complete and realistic representation of the ecosystem. AQUATOX is designed for ecologists, biologists, water quality modelers, and anyone involved in performing ecological risk assessments. Download AQUATOX Release 2 and accompanying documentation at [www.epa.gov/waterscience/models/aquatox](http://www.epa.gov/waterscience/models/aquatox).

## ***NADB Approves \$16.4 Million in Border Conservation Grants***

In its effort to assist U.S. communities along the U.S.-Mexico border to conserve water, the North American Development Bank (NADB) is pleased to announce \$16.4 million in grants from the NADB Water Conservation Investment Fund (WCIF) for six U.S. projects. These projects are estimated to cost a total of \$36.6 million and will receive WCIF grant funding in the amounts indicated below:

- \$1.8 million for the construction of an interconnect system in Cameron County Irrigation District 2, Texas;
- \$4 million for the replacement of the river pumping plant in Cameron County

Irrigation District 2, Texas;

- \$3.6 million for a water conservation improvement project in Delta Lake Irrigation District near Edinburg, Texas;
- \$1.5 million for a water conservation improvement project in Hidalgo County Irrigation District 6, Texas;
- \$2.5 million for Imperial Irrigation District in California to be used for canal repairs; and
- \$3 million for a canal improvement project sponsored by the Yuma County Water Users' Association in Arizona.

These projects are expected to save about 38,600 acre-feet of water annually. Most will also provide other benefits, such as improved water management and irrigation efficiency, energy conservation, and reduced operation and maintenance costs.

The WCIF was created in August 2002 and funded with \$80 million of NADB's retained earnings for the purpose of providing grant financing for water conservation projects in the border region. To date, the NADB has approved \$67.4 million in WCIF grants for 13 projects.

*For more information on the NADB or these projects, visit [www.nadb.org](http://www.nadb.org).*

## ***Former EPA Director Voices Concern for Wetlands***

In an editorial published Feb. 25, 2004 in the *San Francisco Chronicle*, Carol Browner, director of the U.S. EPA from 1992 to 2000, criticized the Bush administration for failing to protect seasonal wetlands – those that are non-navigable or dry for part of the year – which make up more than 50 percent of California's wetlands.

Browner pointed out that although President Bush had in December dropped a heavily criticized proposal to exempt the wetlands from federal protection, he left in place a "guidance" to the EPA that directs field offices not to enforce laws to protect them.

California's streams and lakes are fed by

precipitation received mostly in winter months, and many are dry part of the year or not navigable, yet 20 million Californians rely on these resources for potable water. Browner said since the Clean Water Act is no longer protecting these wetlands, the health and safety of Californians is being compromised. She also argued that the waters provide essential flood and erosion control, habitat for wildlife, and recreational opportunities: all important factors in the economic health of the state. Brown claimed citizens should be "very concerned" about this issue and encouraged support of state legislation that would require the California government to enforce water protections formerly mandated by the federal government.

On March 3, regional EPA director Wayne Nastri responded in the *Chronicle* to Browner's commentary, saying that recent court rulings were responsible for federal agencies' loss of regulatory authority over seasonal wetlands. Nastri said that the EPA, working with the U.S. Army Corps of Engineers and other agencies, was "using every available tool to protect seasonal wetlands" and has filled a historic role as the last line of defense in protecting such areas.

Visit [www.sfchron.com](http://www.sfchron.com).

### **California Agencies Issue New Arsenic, Perchlorate Standards**

In April, the California Environmental Protection Agency's Office of Environmental Health Hazard Assessment (OEHHA) announced a Public Health Goal (PHG) for arsenic in drinking water of 0.004 micrograms per liter ( $\mu\text{g}/\text{l}$ ), or 4 parts per trillion. That concentration is 2,500 times lower than the U.S. EPA's Maximum Contaminant Level (MCL) of 10  $\mu\text{g}/\text{l}$  that will take effect nationwide in January 2006. EPA's current MCL is 50  $\mu\text{g}/\text{l}$ . The California Department of Health Services (DHS) is now responsible for setting the MCL for California, which must be as close to the PHG as possible, considering costs and analytical feasibility.

The California DHS also recently took

action with respect to perchlorate. Perchlorate is a compound from the Cold War era that is contaminating waters in California and other western states, but no federal or state MCL exists for the compound. In the absence of an MCL, DHS uses an "action level"; detections of a compound in excess of this action level prompt certain requirements and recommendations. In 1997, DHS established an action level for perchlorate of 18  $\mu\text{g}/\text{l}$ , based on federal EPA guidance in support of Superfund activities. But in 2002, DHS lowered the action level to 4  $\mu\text{g}/\text{l}$ , which coincided with the analytical detection limit for reporting. Then on March 11, 2004, DHS bumped up the action level to 6  $\mu\text{g}/\text{l}$ , a value identical to the PHG established by OEHHA earlier this year. DHS must also establish an MCL for perchlorate based on the PHG; once the MCL is established, the action level will no longer be used.

Visit [www.oehha.ca.gov/water/phg/pdf/asfinal.pdf](http://www.oehha.ca.gov/water/phg/pdf/asfinal.pdf) for more on the arsenic ruling and [www.dhs.ca.gov/ps/ddwem/chemicals/perchl/actionlevel.htm](http://www.dhs.ca.gov/ps/ddwem/chemicals/perchl/actionlevel.htm) for more on perchlorate.

### **New Web Site for CA Water-Related Grants and Loans**

The California Department of Water Resources (DWR) has introduced a new Web site for grants and loans available for water conservation, groundwater management, and studies and activities to enhance local water supply reliability. The site describes funding available from several state agencies. The site can be searched by funding agency, program, grants, or loans. Results list

grant programs, eligible projects, eligible groups, and maximum funding available.

Among the upcoming opportunities is the Integrated Regional Water Management program, which arose from California's 2003 Proposition 50. Funding will be awarded for projects that protect communities from drought, protect and improve water quality, and improve local water security by reducing dependence on imported water. Up to \$50 million per project will be awarded; a total of \$384 million is available. The deadline for applications is currently posted as "late 2004"; check the Web site for additional information and updates.

The grants and loan Web site is at [www.grantsloans.water.ca.gov](http://www.grantsloans.water.ca.gov).

### **Nevada Denies BLM Stockwater Permits**

On April 16, 2004, *The Elko Daily Free Press* reported that Nevada State Engineer Hugh Ricci had denied 19 applications for permits for stockwater rights by the U.S. Bureau of Land Management (BLM). According to the article, this was the first test of a new state law passed in 2003 that ties the granting of stockwater rights to livestock ownership. In Ricci's interpretation, the BLM did not lease or otherwise own the animals that were to be placed on the land.

According to the *Free Press*, Nevada Sen. Dean Rhoads introduced that legislation after the Nevada Supreme Court found a 1995 law "unconstitutionally

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**ZymaX** Groundwater & Environmental Forensics  
**Isotope Analysis**  
 **$^2\text{H}$   $^{13}\text{C}$   $^{14}\text{C}$   $^{15}\text{N}$   $^{18}\text{O}$   $^{34}\text{S}$   $^{37}\text{Cl}$**   
 $^{15}\text{N}$  of  $\text{NO}_3$ , Inorganic  $^{37}\text{Cl}$ ,  $^2\text{H}$  +  $^{18}\text{O}$  in Groundwater  
 $^2\text{H}$ ,  $^{13}\text{C}$ ,  $^{14}\text{C}$ ,  $^{34}\text{S}$  of crude, Petroleum Fuels & Gases  
**ZymaXisotope.com**  
805.544.4696 [isotope@zymaxusa.com](mailto:isotope@zymaxusa.com)

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discriminatory because it excluded the BLM and other federal agencies from owning water rights” in Nevada. The new law was intended to “strengthen the state’s position that it held sovereign rights to water within Nevada and that those rights should only go to those parties that can put the resource to beneficial use.”

The BLM did not file any appeals, although Jo Simpson, chief of BLM communications in Nevada, pointed out that allowable uses for stockwater include wild horses and other wildlife, not only livestock, and those uses should have been considered, reported the *Free Press*. According to the article, Ricci agreed to meet with the agency to review its position with respect to non-livestock uses.

Visit [www.elkodaily.com](http://www.elkodaily.com)

## **Las Vegas Considering \$1B for Water Imports**

Prompted by continued drought across the Southwest, Las Vegas has begun accelerating plans to tap rural water supplies to supplement its Lake Mead water supply, reported the *Las Vegas Review-Journal* on Feb. 25. According to the article, the Southern Nevada Water Authority (SNWA) board was scheduled to discuss plans to bring groundwater by pipeline from Clark, Lincoln, and White Pine counties to Las Vegas, and make use of surface water rights owned by SNWA on the Virgin and Muddy rivers. SNWA staff have prepared a plan that calls for three water projects to be built over the next 10 years.

According to the *Review-Journal*, SNWA reached an agreement with Lincoln County a year ago that opened groundwater sources to the authority. At least two of the groundwater basins under consideration also reach into neighboring White Pine County, with which SNWA has no agreement, the article said.

According to SNWA spokesman Vince Alberta, before water can be transferred for any of the projects, hydrologic investigations, environmental studies,

public meetings, and design and construction of the conveyance systems will be required and an estimated \$1 billion to fund the projects must be identified, reported the *Review-Journal*.

Visit [www.reviewjournal.com](http://www.reviewjournal.com).

## **Animas-La Plata Water Project “A Mess”**

*Article originally appeared in Water Tech Online, March 25, 2004*

Senators Pete Domenici (R-NM) and Ben Nighthorse Campbell (R-CO) have expressed frustration at the U.S. Bureau of Reclamation’s (BLM) handling of the Animas-La Plata water supply project, *The Rocky Mountain News* reported. Despite its \$180 million estimated cost increase, Campbell told the paper that abandoning the project is not an option. “We’re in a mess, but it’s a mess we’ve got to fix and move forward,” he said at a hearing.

Domenici, chairman of the Appropriations Subcommittee for Water Development, called for the hearing because of concerns over the project’s cost, which is now pegged at \$518 million after factoring in inflation over the seven-year construction period. In 1999, the bureau had estimated the cost at \$338 million, the article said.

Management failures by the BLM and mischaracterizations of site conditions were among the factors that increased costs, said Bennett Raley, assistant secretary for water and science at the U.S. Department of the Interior.

The project will pump water from the Animas River to a 120,000-acre-foot reservoir near Durango to provide water to more than 3,000 members of the Ute Mountain Ute and Southern Ute Indian tribes, as well as businesses and farms in Colorado and New Mexico. The project would also settle century-old disputes over Native American water rights, the paper reported.

Campbell and Domenici agreed that saddling local water users with unforeseen cost increases would be unfair. “Water partners should not have to pay for the

bureau’s mistakes,” Domenici said in the report.

Raley indicated he is confident the BLM can meet its current cost projection. He also said in the article that the agency has revised its procedures in order to ensure future projects are completed within their allotted budgets.

Visit [www.watertechonline.com](http://www.watertechonline.com).

## **U.S. EPA Gives \$75,000 to Help California Tribes Protect Drinking Water Systems**

In February, the EPA awarded \$75,000 to the Rural Community Assistance Center, a nonprofit organization in West Sacramento, California, to help California tribes protect their drinking water systems from vandalism, terrorist attacks, and other threats.

The EPA has awarded \$440,000 to three nonprofit organizations and the Navajo Nation to help tribes in California, Arizona, and Nevada assess and protect their drinking water systems. Tribal drinking water systems are often located in isolated areas that can be difficult to secure and patrol, which makes them potentially more vulnerable to risks.

The Bioterrorism Act of 2002 requires the EPA and drinking water systems to take steps to improve the security of the nation’s drinking water infrastructure. All tribal community water systems that serve between 3,300 and 50,000 people were required to conduct vulnerability assessments by June 2004.

Visit [www.epa.gov](http://www.epa.gov).

## **San Diego County Suspends Desal Talks; Carlsbad Interested**

On Jan. 29, 2004, the San Diego County Water Authority (SDCWA) announced that its board had voted to suspend negotiations with Poseidon Resources for a \$270 million seawater desalination facility at Encina Power Station in Carlsbad, California. The water authority plans to continue its own studies for a seawater

desalination project for the area.

SDCWA largely blamed the action to suspend negotiations with Poseidon on the agency's inability to resolve an ongoing dispute with the private development firm over a 2002 confidentiality agreement. Several other factors that could change the timing of a desalination project were also listed by SDCWA as contributing to the decision to suspend the talks. These included: the potential availability of additional water as a result of lining the All-American and Coachella canals (a provision of the recently completed Quantification Settlement Agreement); the authority's rate analysis and evaluations of options for increasing the region's treated water capacity (currently underway); problems currently experienced in a Poseidon desalination project in Tampa Bay, Florida; and the city of Carlsbad's interest in considering the Poseidon proposal for its local water supply.

According to an article in *The San Diego Union-Tribune* on Jan. 29, 2004, Poseidon's involvement with the Tampa Bay desalination plant was a major

reason for SDCWA's withdrawal from the deal. In 1998, Poseidon was contracted to design, build, own, and operate what was to be the largest desalination plant in North America, while Tampa Bay Water agreed to buy the water at a guaranteed price for five years before purchasing the plant itself. However, according to the article, two of Poseidon's business partners had declared bankruptcy by 2002 and the company had trouble getting financing. In the end, Tampa Bay Water bought out Poseidon's interest and financed the project through government bonds. According to *The Union-Tribune*, additional problems ensued when the plant was ready for testing, including unforeseen clogging of filters and other failures of performance tests. Tampa Bay Water and Poseidon are now engaged in finger-pointing over responsibility for the problems.

On Feb. 6, 2004, *The Union-Tribune* reported that the city of Carlsbad was negotiating with Poseidon for the desalination plant. Under the proposed arrangement, Carlsbad would purchase

water from the plant through a long-term contract but would not pay for the site, construction, or operation of the plant itself, according to the article, and in turn it could receive \$2 million per year in taxes from the project. However, reported *The Union-Tribune*, cost could still be a factor: currently, Carlsbad pays \$530 per acre-foot of water to SDCWA, while Poseidon's best price is \$800 per acre-foot for desalinated water. According to the article, Public Works Director Lloyd Hubbs said SDCWA must pass on to Carlsbad a \$250 per acre-foot subsidy from the Metropolitan Water District, offered to encourage new desalination water sources, or the proposed deal would not work. Hobbs said that Carlsbad is monitoring the problems in Tampa, mostly to make sure the price quote is realistic, according to *The Union-Tribune*. In Hobbs' opinion, Carlsbad's arrangement with Poseidon would be different from Tampa's because Tampa bought the plant and thereby its associated problems, whereas Carlsbad is only planning to buy the water, said the article.

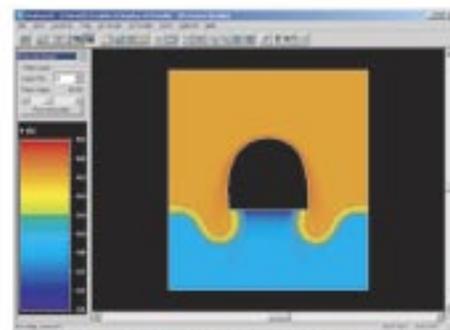
Visit [www.sdcwa.org](http://www.sdcwa.org).

## HYDRUS-2D

MS Windows Program for Simulating Water Flow and Solute Transport in 2D Variably Saturated Media

The HYDRUS2D program is a finite element model for simulating the movement of water, heat, and multiple solutes in variably saturated media. The program numerically solves the Richards' equation for saturated-unsaturated water flow and Fickian-based advection-dispersion equations for heat and solute transport. The flow equation incorporates a sink term to account for water uptake by plant roots. The model includes a parameter optimization algorithm for inverse estimation of a variety of soil hydraulic and/or solute transport parameters. The model is supported by an interactive graphics-based interface for data-preprocessing, generation of a structured mesh, and graphic presentation of the results. The modeling environment includes a mesh generator for unstructured finite element grids, MESHGEN-2D (<http://typhoon.mines.edu/software/igwmcsoft/hydrus2d.htm>).

International Ground Water Modeling Center offers a single user license of HYDRUS2D/MESHGEN2D for \$1200. For details, call at 303-273-3103 or email to [igwmc@mines.edu](mailto:igwmc@mines.edu).



Flow around an underground tunnel

## IGWMC Short Course

Modeling Water Flow and Contaminant Transport in Soils and Groundwater Using the HYDRUS Computer Software Packages, Colorado School of Mines, Golden CO, November 5- 6 , 2004

This course is designed to familiarize participants with the principles and mathematical analysis of variably-saturated flow and transport processes, and the application of state-of-the-art numerical codes to site-specific subsurface flow and transport problems. It is taught by Rien van Genuchten and Jirka Simunek. "Hands-on" computer sessions will provide participants an opportunity to become familiar with the Windows-based RETC, STANMOD, HYDRUS-1D and HYDRUS-2D software packages. The fee for the short course is \$495 before October 21 and \$595 thereafter.

For details & registration: <http://typhoon.mines.edu/short-course/> or contact IGWMC at 303-273-3103, [igwmc@mines.edu](mailto:igwmc@mines.edu).