UNM Utton Center Develops Model Water Compact

From the Utton Transboundary Resources Center

During the past half-century, American states have entered into some 26 interstate water allocation compacts, primarily in the West. As water conflicts increased, so did the realization among experts that most existing compacts were inadequate.

To help address that problem, the University of New Mexico's Utton Transboundary Resources Center at the School of Law has developed a model water compact to help parties avoid costly litigation. In 2000, the project received congressional funding obtained by Sen. Pete Domenici.

The resulting product is now available as a document for use as a traditional interstate compact with states as signatory parties, or as a federal/interstate compact with the United States as a signatory party. The latter approach has been used in the compacts most recently approved by Congress.

"The beauty of the new model compact is that it can be adapted to different situations in the various river basins around the country," said Utton Center Director Marilyn O'Leary.

For more than a year, O'Leary and staff analyzed existing compacts to identify and evaluate strengths and weaknesses in both theory and practice. The next step was to catalog the language in existing compacts as well as congressional consent legislation by topic to identify how critical issues were addressed historically.

O'Leary also assembled a 24-member advisory committee representing a range of professional experts and stakeholders in interstate water issues. Last March, the committee met in Santa Fe for a three-day workshop. Members evaluated and supplemented the principal issues identified by the project and offered further recommendations.

"This model river compact addresses the relevant and integrated scientific, economic, legal, and cultural factors that must be thoughtfully and thoroughly examined by any practicing water resource administrator," said Ken Knox, Colorado's chief deputy state engineer.

"The model compact properly takes into account the sovereign status of Indian tribes and their substantial water rights when they are present in a basin," adds John Echohawk, director of the Native American Rights Fund.

Copies of the model compact can be downloaded from the UNM Utton Center website at uttoncenter.unm.edu/model_compacts.html

Beetles Help Curb Salt Cedar in Texas

From the Texas Water Resources Institute

In the northern part of the Texas Panhandle and in West Texas, researchers from Texas A&M University and the USDA Agricultural Research Service (ARS) are successfully introducing a beetle to help control saltcedar (*Tamarix*), an invasive, water-thirsty plant.

Saltcedar was introduced to the western United States in the 1800s from central Asia as an ornamental tree and planted along riverbanks for erosion control. Without a natural predator, the tree soon out-competed native plants and has infested an estimated 500,000 acres of Texas streams and riverbanks. A single tree may withdraw three to four feet of water per year, depending on its density, age, and the depth to water. Saltcedar also increases soil salinity and wildfire risk, and crowds out native vegetation used by wildlife.

Aerially applied herbicides and controlled burning have been used with some success to reduce saltcedar, but its natural enemy, the saltcedar leaf beetle, or *Diorhabda elongata*, offers a low-cost, sustainable alternative. If established over time, a sufficient population of saltcedar beetles could shrink the saltcedar population. According to Jack DeLoach, an ARS entomologist, saltcedar beetles feed only on saltcedar and will not harm native plants or trees.

DeLoach and other scientists have been conducting laboratory and field research to study beetle taxonomy and behavior, host range, reproduction and overwintering success, climate-matching, release methods, saltcedar growth modeling, and beetle dispersal. They are also measuring the impact of beetle feeding on plant survival and conducting remote sensing and vegetation and bird surveys.

After saltcedar beetles from China and Kazakhstan failed to survive in Texas, researchers imported a specific ecotype from Crete, Greece, which has overwintered successfully for three years. Field nursery sites were established for rearing the beetles in the Upper Colorado River (Texas) watershed, near Big Spring, which has more than 22,000 acres of saltcedar.

In addition to the Big Spring area, study sites have been introduced along the Pecos and Canadian rivers in West Texas. Researchers hope to work with Mexico to control saltcedar along the Rio Grande, where the largest concentration in the state lives.

The beetles kill saltcedar by defoliating the trees, causing them to use up their stored energy to grow new leaves, but eventually depleting that reserve. Researchers estimate that four to five years of repeated defoliation will be needed to kill small trees, although water use begins to fall before the trees die because of the reduced leaf canopy.

The goal is not to completely eradicate saltcedar, rather it is to reach a balance between the beetle and trees, with both in small populations. Hopefully, that balance will be achieved in about five years. The approach has already shown successful results in Nevada and Colorado.

Visit twri.tamu.edu/soil_water_grants/2005/knutson_report.pdf.

continued on next page

Patent Coming for Long Beach Desal Technology

Last fall, the Long Beach (California) Water Department (LBWD) announced that the U.S. Patent Office issued a Notice of Allowance for Patent Protection for a new seawater desalination process developed by LBWD engineers. The two-stage, relatively low-pressure nanofiltration process, dubbed the "Long Beach Method," has been demonstrated to be 20 to 30 percent more energy efficient than reverse osmosis, the current state-of-the-art technology, and is the subject of more intense research and development activity at the nation's largest, fully functional seawater desalination research and development facility in Long Beach. The patent is expected to be issued in early 2007.

The new technology was developed by former LBWD assistant general manager Diem Vuong, who retired recently but remains a consultant at the department's seawater desalination facility. The process has been successfully tested at a 9,000-gallon-per-day (gpd) pilot-scale desalter. Now, with funding from the U.S. Bureau of Reclamation and the Los Angeles Department of Water and Power, it will be tested at a full-size, 300,000-gpd facility to see if the same energy savings can be achieved.

High operating costs, due primarily to high rates of power consumption, and environmental issues related to open-ocean intake and discharge have rendered seawater desalination too costly and environmentally prohibitive in Long Beach to date. Energy consumption is extremely high due to the very high-pressure requirements of reverse osmosis membranes, thus the Long Beach Method has the potential to reduce energy costs.

To address environmental issues, LBWD is designing and constructing an under-ocean-floor intake and discharge demonstration system, the first of its kind in the world, in an attempt to demonstrate that viable, environmentally responsive intake and discharge systems can be developed along the California coast.

Visit www.lbwater.org/desalination/desalination.html.

NEMI Analytical Database Growing, Seeks New Methods

What is the most sensitive analytical method for your compound of interest? The most precise? The most cost-effective for your needs? The National Environmental Methods Index (NEMI) is a searchable online methods database that allows users to search and compare regulatory and nonregulatory field and analytical methods. Publicly released in 2002, NEMI now contains more than 800 method summaries, mostly for water analysis. Its purpose is to provide a mechanism to compare and contrast the performance and relative cost of analytical and field methods for environmental monitoring. Water-related methods include radionuclide and non-radionuclide target analytes, as well as chemical preparation and biological methods. Summaries include all EPA wastewater and drinking water regulatory methods and most of the commonly used methods for nutrients and total maximum daily load measurements.

Recent additions include USGS field methods for measurement of pH, dissolved oxygen, conductance, redox, alkalinity, and temperature, as well as field protocols for biological population sampling and toxicity test information. Expected soon are USGS field protocols for the collection of depth- and width-integrated water column samples.

In the future, NEMI plans to add more field analytical and biological methods, methods for other media (air, soils, sediments, and wastes), and new methods for emerging contaminants of concern. In addition, an "expert system" user interface is planned. This software program will combine knowledge with data to provide targeted information for a user, as if the user were querying another human.

NEMI was developed under the direction of the Methods and Data Comparability Board, a partnership of water-quality experts from federal agencies, states, tribes, municipalities, industry, and private organizations. The board is chartered under the National Water Quality Monitoring Council, which in turn is chaired by the USGS and U.S. EPA.

New methods are sought for the database. These may include laboratory or field sampling methods in a variety of media/matrices such as air, water, soil, sediment, or tissues. Government, private, and public organizations, including commercial and volunteer monitoring sectors, may submit methods. Instructions and criteria for inclusion are available on the NEMI website.

Visit www.nemi.gov.