



# CONSERVATION

A Newsletter Published by the New Mexico Water Conservation Alliance

## Sandia Explores Water Recycling

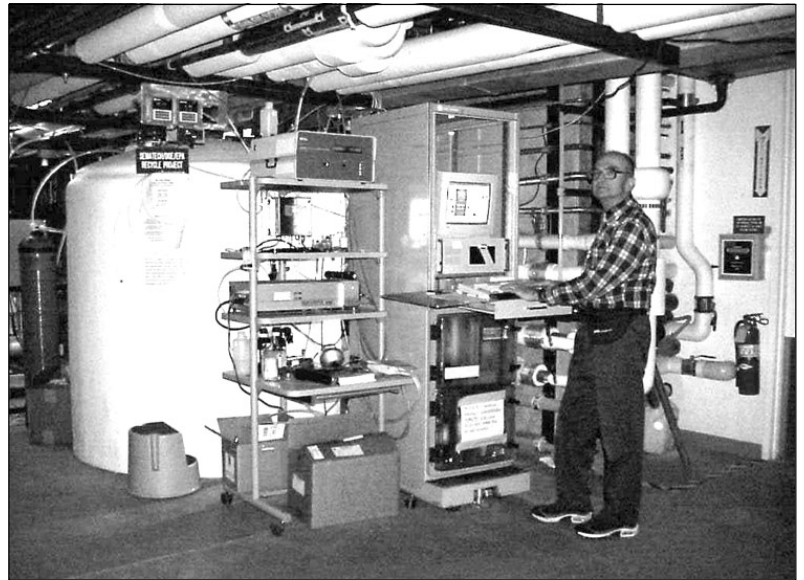
A pilot project at the Microelectronics Development Laboratory (MDL) at Sandia National Laboratories is helping America's semiconductor industry save water through recycling.

MDL is a state-of-the-art facility for designing, fabricating and testing microtechnology products. It includes a 30,000-square-foot cleanroom and complete tool set for fabricating microelectronic circuits to support Sandia's national security programs. It also fabricates MicroElectroMechanical systems as part of Sandia's internationally recognized micro-machines research and development effort.

The MDL is also Sandia's largest water user, accounting for about one-sixth of Sandia's total yearly water usage. Most of this water is consumed as ultra-pure water in the fabrication processes. It is used to wash contaminants off the silicon wafers as they pass through the processing steps and, in some of the wet-chemical processes, for forming microcircuits and micromachines. Because the features of the products are so small (as small as 14 millionths of an inch), the water used in the processes must meet stringent requirements for purity.

MDL's water treatment plant uses water from the Kirtland Air Force Base drinking water system to produce approximately 60 million gallons of ultra-pure water per year. In order to minimize MDL's impact on the Albuquerque aquifer, Sandia has been implementing a variety of water-conserving measures over the past three years. Efficiency improvements in the water treatment plant have reduced the amount of drinking water needed to produce each gallon of ultra-pure water. After being used in the fabrication processes, spent ultra-pure water is used in the building's cooling tower, reducing the amount of makeup water drawn from the drinking water system. These measures have resulted in savings of about 50 million gallons of water a year.

The recycling pilot project in the MDL is demonstrating the use of used ultra-pure water as feedstock for the ultra-pure water treatment plant. SEMATECH, a consortium of semiconductor and fabrication equipment manufacturers, is funding the pilot project to provide informa-



*Robert Donovan of Sandia National Laboratories at the controls of the water recycling pretreatment system in Sandia's Microelectronics Development Laboratory.*

tion the entire industry can use to evaluate water recycling. The pilot system monitors the quality of the feed water and removes contaminants that could adversely affect the treatment plant.

According to project engineer Robert Donovan, tests indicate that the recycled feed water is of equal or better quality to drinking water from Kirtland Air Force Base's system by several measures. While some work remains to further reduce carbon compounds and dissolved oxygen, the quality of ultra-pure water at the outlet of the treatment plant is unaffected by whether the feed water is recycled or not.

Recycling ultra-pure water would save 70% to 80% of the

water drawn from the drinking water system to make ultra-pure water. Since the input would be of higher quality than normal drinking water, the treatment plant would have a higher capacity with recycling than without. This is particularly important since Sandia is starting a project to construct a new fabrication facility, and using recycled feed water to supply its ultra-pure water would save costs in building the new facility's treatment plant.

Understandably, the operators of the MDL are reluctant to change anything in their processes unless they are confident their ability to fabricate products will not be diminished. A major purpose of the recycling pilot project is to collect data to provide that confidence.

# NEWS BITS

## Drought Brochure Available in May ...

In spite of March rain and snow across the state, all eight climate divisions of New Mexico remained in some stage of drought during April. The southern one-third of the state was declared to be in an emergency status by the New Mexico Drought Task Force's monitoring group. To help communities better prepare for drought impacts and to provide information on drought assistance that is available, another work group of the Drought Task Force has prepared a drought brochure. Aimed primarily at local government officials, the brochure will be ready in May and can be obtained by calling 1-800-WATER-NM.

## Denver Conference Includes Conservation ...

The American Water Works Association will include a water conservation track at its annual conference in Denver June 11-15. Topics include efficient irrigation strategies, water reclamation and reuse, new clothes washer standards and programs, and measurement of conservation savings. In addition, there will be meetings of

the AWWA Water Conservation Division and conservation committees, which provide a good networking opportunity with water conservation professionals from around the country. For more information, call 1-800-926-7337 or visit the AWWA web site at [www.awwa.org/ace2000](http://www.awwa.org/ace2000).

## Water Harvesting Guide Available ...

The City of Albuquerque has produced a 27-page rainwater harvesting guide that includes information on designing and constructing both simple and more complex rainwater harvesting systems for homes. Albuquerque residents may order the guide by calling the city's Water Conservation Office at 505-768-3655. Others may obtain a copy from the New Mexico Office of the State Engineer at 1-800-WATER-NM.

## Xeriscape Conference Scheduled ...

Author and researcher Sandra Postel will be the keynote speaker at the xeriscape conference to be held October 20-21 in Albuquerque. Postel is well known for her work on global water scarcity. The conference

will bring together people interested in building and managing sustainable, water-efficient landscapes and gardens. There will be expert speakers, panel discussions, exhibits and plenty of opportunities to share experiences with other participants. To find out more, call the New Mexico Xeriscape Council at 505-343-4121 or check their web site at <http://www.xeriscapenm.com>.

## Conservation Grants Awarded ...

Early this year the U.S. Bureau of Reclamation awarded over 20 water conservation grants to entities in New Mexico. Projects funded included developing water conservation plans, initiating a variety of educational projects such as water fes-

tivals and a natural resources camp, and demonstrating efficient agricultural conservation practices.

## OSE Receives National Award ...

The U.S. Bureau of Reclamation has presented a national water conservation award to the New Mexico Office of the State Engineer. Credited with being a leader in promoting wise, efficient water use in New Mexico and contributing to Reclamation's Water Conservation Field Services Program in the state, the office received one of five annual conservation awards. Also recognized individually for their water conservation efforts were Alice Darilek and Sharon Aller of the OSE Water Use and Conservation Bureau.



Mike Gabaldon presents Reclamation award to Sharon Aller. David Allen (left).

## Alliance Says Goodbye

The New Mexico Water Conservation Alliance says goodbye to two of its key members, Sharon Aller and Doug Bennett. Treasurer Sharon Aller, formerly with the New Mexico Office of the State Engineer, has

moved to Seattle to pursue her career in the King County recycling program and be closer to her family. Alliance President Doug Bennett, formerly with the City of Albuquerque Public Works Department, was re-

cently hired to head the water conservation program with the Southern Nevada Water Authority in Las Vegas.

We will miss both Sharon and Doug very much and wish

them our best. Their hard work to further water conservation efforts in New Mexico will remain appreciated for a long time to come.



# Las Vegas' Water Woes

*Guest article from Wendy Easton, Manager,  
Tierra y Montes Soil and Water Conservation District, Las Vegas*

The city of Las Vegas is located about 60 miles northeast of Santa Fe. It is a community of about 18,000, growing at a rate of just under 2% per year. The Gallinas River is the primary source of drinking water for the community. The amount of water that the city has rights to from the Gallinas River is still in litigation. The city also leases the right to 500 acre-feet of water from the Storrie Project Water Users Association or Storrie Lake, which also comes from the Gallinas River. It also has wells at the Taylor well field, which are inoperable at this time and have a very limited supply.

Las Vegas has had water restrictions imposed in six of the last nine years, due to lack of adequate snowpack. This year water restrictions began in November, which

is the earliest restrictions have ever been imposed. This is good news, however, as it shows that the city is taking a more proactive approach to its water supply problems.

I use the word "problems," as the city indeed has problems. Should a multiple-year drought occur, and historical records show that such an event has occurred and will most likely occur again, Las Vegas could be in a state of emergency where drinking water is concerned. This is a growing area, without sufficient water rights and backup supply for dry years.

But this is an area where residents take pride in their green lawns, lovely Victorian homes, and beautiful gardens. Xeriscape is a new concept in Las Vegas. Most people still think xeriscape means black plastic and rock. We are trying to teach people to use native grass seed and native plants. Rain-water harvesting is an idea whose time has come, but with a long way to go in this community. When we get precipitation, we

need to capture it, store it, and use it in dry times. Retrofitting for improved water use efficiency is something that needs to be defined to the water consumers in the area.

Most residents, including myself, live in old homes. Old homes have old plumbing. Old plumbing delivers water abundantly, without regard to water conservation. Updating plumbing costs money that many of us don't have available. I recently had the "guts" of my commode replaced and the water level adjusted to save water. Yes, it's cheaper than purchasing a new commode, but it still costs.

What is the answer for Las Vegas? Will it be in purchasing existing water rights from irrigators and changing the culture of our community? Will it be in purchasing water rights from another watershed and running a pipeline to Las Vegas? Will it be an active plumbing retrofit program, xeriscape, rain-water harvesting, water rate surcharges, limits to household water use, and strictly enforced water conservation? Or will it be put off, until that emergency hits, and we literally run out of water?

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## 1.6 Toilet Stays! ... For Now

Water conservation advocates had some good news from Congress in April. A House Commerce subcommittee rejected a bill that would have eliminated 1992 federal water conservation standards for toilets, urinals, showerheads and faucets. Rep. Heather Wilson cast a key vote to help defeat the bill. She and another Republican, Rep. Michael Bilirakis of Florida, joined 11 Democrats in the close 13-12 vote.

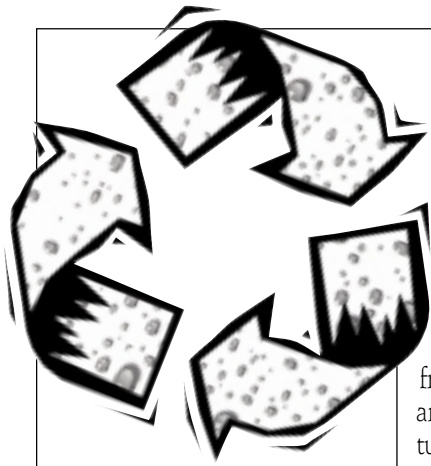
The legislation, proposed by Rep. Joe Knollenberg, R-Mich., had been gaining

momentum from a large list of co-sponsors and national media coverage on the issue. Knollenberg had promoted the legislation as an anti-regulatory effort to get government regulation out of the bathroom and cited consumer complaints about having to double-flush the low-water-using toilets as another reason for the bill.

While manufacturers acknowledge that some early 1.6 toilet models did not operate well, they stress that newer models have resolved those problems. Supporters of the federal plumbing standards say the stan-

dards have helped municipalities save millions of gallons of water. They also warn that, if the standards were defeated, many states would adopt their own regulations, creating a patchwork of standards among the 50 states.

Although the bill's supporters have vowed not to give up the fight, the subcommittee vote was a major victory for municipalities, plumbing manufacturers, environmental groups and others who had lobbied hard against the bill.



## ALLIANCE SPONSORS RECYCLING WORKSHOP

In March, the Alliance's Industrial/Commercial/Institutional Work Group sponsored a workshop on recycling water in semiconductor fabrication plants. Recycling is becoming a hot topic in this field, since semiconductor production requires vast quantities of ultra-pure water.

This water usually comes from domestic water systems and is treated by the manufacturers to meet rigid standards of purity and cleanliness. Increasingly, semiconductor firms, who are expanding facilities to meet the rapidly increasing demand for their products, are finding the costs of both the water supply and treatment a cause for concern. Recycling the ultra-pure water from the process back into the treatment

plant may be a solution to both problems.

The water recycling workshop attracted participants from semiconductor manufacturers like Intel, Phillips, and Sumitomo, as well as other interested people from the research, engineering, and industrial communities. They heard speakers discuss their recycling experiences at Atmel in Colorado Springs and Texas Instruments in Dallas. One of the conference or-

ganizers, Darell Rogers of Sandia National Laboratories, reported that many of the participants were surprised at the amount of recycling efforts going on and at the success of those projects.

Rogers had special praise for Intel, who hosted the workshop at its Rio Rancho plant, and for Sandia, which provided the speakers' expenses and honoraria.



### **New Mexico Water Conservation Alliance**

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To add a name to the *Current* mailing list, or to find out more about the Alliance, write to the return address above or call 1-800-WATER-NM. The *Current* can also be found on the following web site: <http://wrri.nmsu.edu>.