

# SoCal Salinity News

VOLUME 2, NUMBER 2

WINTER 2005

## Coalition Members

Central and West Basin  
Municipal Water Districts

Los Angeles  
Department of  
Water & Power

Inland Empire  
Utilities Agency

Irvine Ranch  
Water District

Metropolitan  
Water District  
of Southern California

Orange County  
Sanitation District

Orange County  
Water District

San Diego  
Water Authority

Sanitation Districts of  
Los Angeles County

Santa Ana  
Watershed Project  
Authority

*in Affiliation with the*

National Water  
Research Institute

## Groundbreaking Project Will Address Salinity Issues in Landscape Irrigation with Recycled Water

The Southern California Salinity Coalition is co-funding a unique project that will compile a user-friendly database on what role — if any — the salts in recycled water have on landscape flora in the Southern California region and how to mitigate potential salinity problems.

The project, called “Salt Management Guide for Landscape Irrigation with Recycled Water,” was developed for the express purpose of showing that recycled waters are safe and suitable for landscape irrigation and the salinity of recycled waters is not excessive or harmful to most landscape plants.

Slated for completion in early 2006, this project is expected to be a challenge for its seven co-principal investigators — the majority being from the University of California system — because, quite simply, very little research and data are available on this topic.

“Using recycled water for landscape irrigation is not new to the field,” said Project Coordinator and Principal Investigator Dr. Kenneth Tanji, Professor Emeritus at the University of

*“There are other databases out there on landscape plants, but they only show healthy plants. Ours will be the first compact disc database that will have information on the effects of water quality on plants, soils, and water application systems.”*

*~ Dr. Kenneth Tanji*

California, Davis. “However, what we don’t have is a central reference resource for coping with potential salinity problems associated with recycled water. There may be information, but it’s scattered about and limited in scope. We know of individual nurseries, for instance, that have experience regarding which plants will tolerate the salts in recycled water,



*Roughly 21 percent of California’s recycled water is used for landscape irrigation, with golf courses being major customers. This project will help promote an increase in the use of recycled water for landscape irrigation in Southern California.*

but they never wrote anything up. What we hope to do is compile all that information onto one guide.”

One of the products of the project will be a “Salt Management Guide” on CD-ROM, a database that will help landscape professionals accurately diagnose salt-related problems.

Consider this scenario. The landscaper irrigating with recycled water may notice damaged or dying plants. He pulls out his laptop computer to access the “Salt Management Guide” downloaded onto his hard drive. Using the data and images from the guide, the landscaper is able to compare his plants to photos of plants suffering from salt damage. With a click of the mouse, he may be able to look into options such as selecting a more salt-tolerant plant for his landscape, checking water application rates to determine if adequate water has been used to meet the plant’s needs, or even changing the water application method from one type of sprinkler to another to avoid foliage salt damage.

“There are other databases out there on landscape plants,” said Dr. Tanji, an agricultural salinity expert, “but they only

*Please see PROJECT on page 2*

## Project Promotes Landscape Irrigation with Recycled Water

*Continued from page 1*

show healthy plants. Ours will be the first compact disc database that will have information on the effects of water quality on plants, soils, and water application systems.”

### **Why Recycle?**

A major objective of the project is to “encourage the conservation of drinking-water supplies by publicizing the value of recycled waters,” said Dr. Tanji.

He explained that over the next 25 years, California will gain an additional 17-million people, catapulting the population to 52 million. In an effort to meet the water demands of a growing population, the State is now taking proactive steps in conserv-

ing and augmenting our limited water resources.

One solution is to recycle more water.

Recycled water is municipal and industrial wastewater that has been

*At present, of the 525,000 acre-feet per year  
of recycled water used in California,  
roughly 21 percent is used  
for landscape irrigation*

extensively treated and is safe to reuse for non-drinking purposes.

There are several benefits to using recycled water, such as:

- It is an abundant and reliable local supply — which is especially important to many arid regions in California that have to import water (often, at high costs).

- It provides protection against drought.

- It is often cheaper than potable water (for instance, as of July 2004, the recycled water rate for the City of San Diego was 46 percent of the potable water rate).

- Using recycled water for non-drinking purposes conserves the drinking-water supply for drinking and bathing purposes.

For over 100 years, California has been using recycled water in a variety of ways, like irrigating pastures and some crops, flushing toilets and urinals in office buildings, making artificial snow, and replenishing aquifers. It is also used for landscape irrigation.

Golf courses are often the main customers for landscape irrigation with recycled water (over 125 do so in California). Others include schoolyards, parks, cemeteries, nurseries, roadside vegetation, and some residential areas.

At present, the California Department of Water Resources estimates that of the 525,000 acre-feet per year of recycled water used in California; roughly 21 percent is used for landscape irrigation.

But we can do better than that, suggests Dr. Tanji. “It’s a waste to use high-quality potable water for non-potable purposes like landscape irrigation,” he said. “Especially when we have a lot of municipal and industrial wastewaters that can be treated and put to good use.”

The focus of this project is on the Los Angeles region, which Dr. Tanji said is responding to the State’s desire to double the amount of water it recycles by the year 2030. The Los Angeles region is already a leader in the recycling field; it alone uses almost a fourth of the recycled water used in California (152,316 acre-feet per year, according to the Office of Water Recycling [2003]). That’s more than the Santa Ana, San Diego, or San Francisco Bay regions combined. However, of the four regions, Los Angeles uses the least amount of recycled water for landscape irrigation — only 17 percent — while San Diego uses almost 80 percent and both Santa Ana and San Francisco Bay use 34 percent each.

In fact, the enthusiasm for promoting more recycled water for landscape irrigation in Los Angeles is so high that several of the project’s

### ***Southern California Salinity Coalition BOARD MEETING DATES***

*Date:* **Thursday, April 8, 2005**

*Location:* Orange County Water District  
10500 Ellis Avenue  
Fountain Valley, California 92708  
(714) 378-3200 *Phone*

*Time:* 9:00 am to 3:00 pm

*Date:* **Thursday, July 8, 2005**

*Location:* To be determined

*Time:* 9:00 am to 3:00 pm

*Date:* **Thursday, October 7, 2005**

*Location:* To be determined

*Time:* 9:00 am to 3:00 pm

Board meetings are open to the public.  
For locations, please contact (714) 378-3278  
or [trusso@NWRI-USA.org](mailto:trusso@NWRI-USA.org).

Look for more Salinity Coalition events at  
[www.NWRI-USA.org!](http://www.NWRI-USA.org)

funding partners are from the area. In addition to the Southern California Salinity Coalition, the partners include the WaterReuse Foundation, California Department of Water Resources, City of Cerritos, Los Angeles Department of Water and Power, Water Replenishment District, Central and West Basin Municipal Water Districts, and National Water Research Institute.

### **High Salt Tolerance**

When the Central Basin Municipal Water District first approached landscapers in the Los Angeles area about using more recycled water for irrigation purposes, the District found that many were reluctant for fear that excess salinity in recycled waters would damage or kill the plants. This project is expected to help alleviate those fears by showing that the salts in recycled water may not be the cause of the problem in every scenario.

“While it’s true that there’s more salinity in recycled water than fresh-water,” said Dr. Tanji, “it’s only by a small amount. On average, the process of recycling adds about 300 milligrams per liter (mg/L) of salt to the source water, and it’s a bit higher if water softeners are extensively used.”

Sometimes the problem originates with the source water. For example, much of Southern California receives imported Colorado River water for drinking-water purposes. According to California’s Colorado River Water Use Plan (2002), the Colorado River’s salinity levels average about 700 mg/L (levels between 700 to 850 mg/L are considered detrimental to salt-sensitive plants). Salinity levels in groundwater, another source of potable water, can also vary, ranging from as low as 300 mg/L to as high as 1,500 mg/L.

Meaning that, regardless if you use high-quality drinking water or recycled water for irrigation, you may end up with salt damage to salt-sensitive plants, like roses, gardenia, ginkgo and Chinese Pistache trees, and verbena and ajuga.

The salts associated with salinity can affect growing plants in several ways. One is called the osmotic effect: salts attract water and compete with plants for it, meaning that “as salinity rises, plants have to expend more energy to suck up water,” said Dr. Tanji. When plants have to use more energy to get water — energy that would otherwise be used for growing, flowering, or fruiting — the end result is negative (stunted growth, wilting, and so forth). Another major concern revolves around the constituents that make up salinity. Sodium and chloride ions, as well as boron, for example, can be toxic to plants, causing severe damage such as leaf burn and leaf drop and, in some instances, even death.

“One solution to this problem is to select plants that are more salt tolerant so that they can survive with moderately saline water,” said Dr. Tanji. “Part of this project is to identify these plants. Right now, we are compiling a list as part of the database, and it will include both native and non-native plants.” Examples of more salt-tolerant plants include Ceanothus and Japanese Boxwood, forsythia and escallonia, and periwinkle and rosemary.

Another important point is that

## **Spotlight on Kenneth K. Tanji, D.Sc., Principal Investigator**

Dr. Ken Tanji is internationally recognized for his work on the water-quality aspects of irrigation and drainage. Currently Professor Emeritus, he retired from the University of California, Davis, after 41 years as a Professor of Hydrology in the Department of Land, Air, and Water. At present, he serves on numerous panels for organizations such as the National Research Council, United Nations’ Food and Agricultural Organization, and California Department of Water Resources, and he is the editor of the manual, *Agricultural Salinity Appraisal and Management*, published by the American Society of Civil Engineers.



sometimes the plant damage is not even related to water, recycled or otherwise.

“Water quality is not always the issue,” said Dr. Tanji, who used the example of golf courses that have been built on top of landfills: “Sometimes when soil is brought in to cover these landfills, the turf grasses don’t perform as well. In many cases, the soil is already contaminated with natural salinity. Or the topsoil is shallow, but the plant has a deep root system, so it can’t grow.”

The overall message, added Dr. Tanji, is that “we need to be careful when evaluating these types of problems. There are a lot of issues in landscape horticulture that may or may not be related to the quality of the recycled water.”

### **End Results**

With funding provided by the Southern California Salinity Coalition and its financial partners, the project’s principal investigators are at present busy compiling the project’s first product, a literature review on the suitability of recycled waters for landscape irrigation.

*Continued on page 4*

## Don't Miss the SoCal Salinity Coalition 2005 Planning Workshop!

The Southern California Salinity Coalition is holding the 2005 Planning Workshop in collaboration with three regional water quality control boards — Los Angeles, San Diego, and Santa Ana — to discuss current and upcoming salinity management activities, as well as coordinated approaches to regulations and projects focused on protecting Southern California's watersheds from increasing salinity.

Key topics include Ventura County's new brine line within the Calleguas Creek Watershed, water softener control strategies, and State and Federal legislation. A question-and-answer session will also be included.

### WORKSHOP TOPICS AND SPEAKERS

#### Salinity Reduction Study

Kim Knight and David Kung,  
*Claremont Graduate University*

#### Status Report on Water Trends: Colorado River

Bill Hasencamp,  
*Metropolitan Water District of Southern California*

Status Report on Water Trends:  
CALFED Activities to Improve Salinity  
Randall Neudeck,  
*Metropolitan Water District of Southern California*

#### Update on Industrial Pre-Treatment

Robert Ghirelli, *Orange County Sanitation District*

#### Legislative Report

Guest Speaker: Richard Harris, *WaterReuse Association*

#### Update on the Brine Line in Ventura County

Susan Mulligan, *Calleguas Municipal Water District*

#### Regional Water Quality Control Board Updates

Jerry Thibeault, *Santa Ana Regional Board*  
John Robertus, *San Diego Regional Board*  
John Bishop, *Los Angeles Regional Board*

### DATE AND LOCATION

Friday, February 25, 2005 ■ 10:30 am to 1:30 pm ■ No Registration Fees ■ Lunch Is Included

Metropolitan Water District of Southern California ■ 700 North Alameda Street ■ Los Angeles, California 90012

*Directions and parking information are available at [www.NWRI-USA.org](http://www.NWRI-USA.org).*

The workshop is open to the public, but space is limited!

To register, please contact Tammy Russo at (714) 378-3278 or [trusso@NWRI-USA.org](mailto:trusso@NWRI-USA.org)

## "Salt Management Guide" to Be Released in 2006

*Continued from page 3*

The literature review will be included onto the "Salt Management Guide" CD-ROM as one of the tools available to help landscape professionals determine potential salt problems and management strategies. The "Salt Management Guide" is anticipated to be free of charge.

The project will wrap up with an

educational brochure for the public. This brochure will discuss both the issues related to salinity and the value in using recycled waters for irrigation practices in Southern California.

"This is a very exciting project that is receiving a lot of support and interest," said Dr. Tanji. "The more we understand and use recycled waters for landscape irrigation, the more

reliable the potable water supply will be in the years to come."

■  
*The Southern California Salinity Coalition is dedicated to addressing the critical need to remove excess salts from water supplies and to preserve water resources in California. For more information, please visit [www.NWRI-USA.org](http://www.NWRI-USA.org).*

## Southern California Salinity Coalition

*in Affiliation with the*

National Water  
Research Institute

10500 Ellis Avenue  
P.O. Box 20865  
Fountain Valley, California  
92728-0865

(714) 378-3278  
Fax: (714) 378-3375

[www.NWRI-USA.org](http://www.NWRI-USA.org)

Email:

[SoCalSalinity@NWRI-USA.org](mailto:SoCalSalinity@NWRI-USA.org)