

## A Call On Nature To Fight Pollution

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### FEATURE ARTICLE: A Call On Nature To Fight Pollution

by John Krist

In the years following passage of the Clean Water Act in 1972, counties and cities across the country found themselves forced to comply with restrictions on the release of municipal sewage and industrial waste. For the most part, they accomplished this by cracking down on polluting factories and by investing billions of dollars in advanced mechanical filtration and chemical disinfectant technology.

Such measures could only do so much. They were effective in controlling pollution from large, easily identifiable sources, but 40 percent of the nation's surface waters remain too polluted to meet the Clean Water Act's goal of being safely swimmable and fishable, according to the Environmental Protection Agency (EPA). Pollutants ranging from pesticides and fertilizer to oil, gasoline, and human and animal waste continue to reach rivers, streams, and coastal waters from non-point sources: farm fields, urban streets and parking lots, suburban back yards. Today, non-point source pollution remains the nation's largest source of water quality problems.

The nation's water-quality regulators are now going after these diffuse, harder-to-control sources. And if the response by several municipalities in California is any indication, the new generation of wastewater treatment facilities will look a lot less like sewage plants and more like, well, just plain plants. ENTER THE CONCEPT OF "LOW IMPACT DEVELOPMENT."

A strategy, known as bioremediation, relies on living organisms to naturally remove such contaminants as nitrogen and organic compounds from polluted water, and it is winning fans in the private and public sectors. One of the most ambitious examples of this strategy will soon be provided by the Irvine Ranch Water District (IRWD).

IRWD provides domestic water service, sewage collection, and water reclamation for the city of Irvine and the unincorporated areas of south-central Orange County as well as portions of Tustin, Santa Ana, Newport Beach, Costa Mesa, Orange, and Lake Forest. The district's service areas drain into Newport Bay primarily through San Diego Creek, both of which the State Water Quality Control Board (SWQCB) has identified as "impaired" because of contamination by heavy metals, pesticides, and other toxins. Newport Bay also is contaminated by nutrients such as nitrogen and phosphorus, which are not themselves toxic, but which cause huge algae blooms and can lead to fish die-offs as decaying algae deplete the water of oxygen.

The EPA adopted pollutant standards for sediment, nitrogen, and phosphorus in the San Diego Creek–Newport Bay watershed in 1999 and for toxic contaminants in June of this year. Additionally, the state has adopted a non-point source pollution control plan, mandated by the EPA, which delegates responsibility for devising and enforcing specific pollution-control measures to the state's nine regional water-quality control boards. The Santa Ana Regional Water Quality Control Board, with authority over most of coastal Orange County (as well as portions of Riverside and San Bernardino counties), adopted new stormwater standards for Orange County and all its cities earlier this year.

Compliance with the maze of new coastal water pollution standards falls increasingly on municipal agencies that serve urban homeowners and developers -- agencies such as IRWD. Although these standards have drawn irate opposition from many city officials and representatives of the building industry as well as environmental organizations, IRWD is taking a pragmatic approach adopted by several other agencies throughout California.

The district plans to construct about 37 small wetlands scattered throughout the San Diego Creek watershed. Dry-weather runoff from existing and new development will be shunted through the network of ponds and marshes, where plants and microbes will absorb nitrogen and other nutrients and break down bacteria and other contaminants. Once it has been cleaned by biological processes, the runoff will be allowed to flow into the natural waterways.

IRWD is calling its project the Natural Treatment System and estimates it will cost \$25 million to \$30 million to build. It is modeled after an earlier marsh restoration project the district credits with a 25 percent drop in algae blooms in Newport Bay. Beginning in 1996, the district diverted the flow from San Diego Creek into a restored wetlands complex known as San Joaquin Marsh. After circulating through the marsh and its ponds for several days, during which it is filtered by algae, cattails, bulrushes, and other aquatic vegetation, the water returns to the creek channel with half its nitrogen content removed.

An estimated 1,000 similar projects have been undertaken across the country. The Tennessee Valley Authority has developed nearly two dozen wetlands to treat acid drainage from its coal mines and coal-fired power plants in Alabama and Tennessee. Constructed wetlands treat municipal sewage in Benton, Tenn., acid mine drainage at Patoka River National Wildlife Refuge in Indiana, metal-contaminated drainage from a steel mill in Pennsylvania, explosive-contaminated groundwater at an Army munitions plant in Tennessee, and urban runoff at Lake Whitney in Hamden, Conn.

In California, wetlands remove dairy cow waste from agricultural runoff in Chino, fecal coliform from street runoff in Laguna Niguel, and contaminants in municipal sewage plant discharges in Pacifica. Chevron operates a nitrate-removing wetland at its refinery in Richmond. The Orange County Water District uses a complex of 50 small wetlands behind Prado Dam in Riverside County to remove nitrates from the Santa Ana River before it is allowed to recharge the local groundwater basin.

IRWD's project, which it is developing in partnership with Orange County and several local cities, is still in the early planning stages. Environmental review is expected to end this month and design is expected to commence after that. If all goes as planned, construction will begin next year. Some of the wetlands will be installed in existing storm water and flood retention basins. In new development areas, however, the district expects landowners to provide property or easements and to pay for the costs of constructing the wetlands and related facilities. The district also is seeking state and federal grant money to cover part of the cost.

\*\*\*\*\* About the Author \*\*\*\*\*

John Krist is a senior reporter and Opinion page columnist for the Ventura (Calif.) County Star and a contributing editor for California Planning & Development Report. A journalist for nearly 20 years, he writes frequently about environmental issues and Western land-use policy. Material for this article was obtained from the Environmental News Network, October 18, 2002 ([http://enn.com/news/enn-stories/2002/10/10182002/s\\_48710.asp](http://enn.com/news/enn-stories/2002/10/10182002/s_48710.asp))

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CONFERENCE: Water Security in the 21st Century

This is a "Call for Papers" and initial notice of a Conference on Water Security in the 21st Century to be held on July 30 - August 1, 2003 in Washington, D.C. The goal is to bring together academia, federal and state agency experts, and other professionals to discuss the status of water resources research, education, infrastructure, management and policy, introduce innovative case studies, and propose new approaches that can be incorporated into research and education programs and formulated into new legislation and policy. Abstracts (300-500 words) that detail the objective of potential papers (or workshops) and provide a discussion of approaches, results, and potential impacts on water research, education, policy and management should be submitted by October 15, 2002

to: Margaret Skerly, Universities Council on Water Resources 4543 Faner Hall, Southern Illinois University,  
Carbondale, IL 62901-4526 (e-mail: mskerly@siu.edu).

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**SDC HIGHLIGHT CORNER: A Very Special Poem**

(Editor's Note: I heard this poem at a "River of Words" session several weeks ago and asked the author, Mona Wright, to offer it to our readers for their reflection. I personally found these words extremely powerful.)

"An Eye For An Eye"

War, War, War!!! You say, that's the only way. Fight, kill, destroy!!! No time, to stop and pray.

You say, it's all for justice and also to repay, what happen to "America", that dreary 11th day.

I realize that we're hurting, I feel it everyday,

But - "Revenge" stands for more, than politicians want to say. You see

the R - is for refusing to turn from sin,

the E - is for explosions that never end,

the V - is for victory never won,

the E - is for the end, that's surely soon to come.

The N - is for neglect, neglect of everyone. The pain, the hurt, the injustice, that has been existing, long before September 11, 2001!!!

The G - should stand for goodness, like water from a stream, very close to the eternal, the things that go unseen.

The last E - is for evermore, which means forever after, Because; "REVENGE" - means more war, long suffering, no laughter!!!

\*\*\*\*\* About the Author \*\*\*\*\*

Mona Wright, a native Washingtonian, is a born-again Christian, who dearly loves the lord, and has a heart of compassion for his people. She is a poet, writer, and actress. Her most recent performance was a feature role as the angel in a local play titled " To God be the glory " where she wrote and recited some of her poetry. She attended the University of DC and Strayer University. Mona can be reached at e-mail: MWright@amerchiro.org.

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**FUN RESOURCE: New Board Game About Sustainability**

A new board/card game will soon be available. It is called The Community Game and is based on the concepts

that surround Sustainability. Larry Jozwik, a science teacher at McKinley Middle Charter School in Racine, WI, designed The Community Game. McKinley Middle Charter School is one of Wisconsin's largest charter schools with over 1000 students. The school's philosophical base is centered on System Thinking and Sustainability. The Johnson Fund and Sustainable Racine, both leaders in the field of Sustainability, gave financial support for the production of the game. The game was initially designed to introduce the concepts and terms surrounding Sustainability to McKinley Middle Charter School students. However, the game was such a success that the school decided to professionally market it. Although competitive, the main purpose of the game is for the players to make wise decisions and choices in order to reach a Sustainable Community. As pointed out within an "Important Note" under winning the game, "The concept of Sustainability does not involve winners and losers, it is about working towards a shared vision." The profits from the initial run of the game will be placed into a "Sustainability Fund." The interest accrued from this fund will be used by McKinley Middle Charter School to help defer some of the costs for school and community projects that will foster Sustainability. For more information concerning the game contact Larry Jozwik, McKinley Middle Charter School, Racine, WI 53405, or e-mail [ljozwik@hotmail.com](mailto:ljozwik@hotmail.com).

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