

Conservation Design—It's Nature's Way (The Howler Nov.'94)

If one way be better than another, that you may be sure is nature's way.
[Aristotle](#)

For once in my life, I felt like I was in the right place at the right time.

The place: Although not one of my usual haunts, the swank Raddison Hotel Conference room teemed with an upscale audience, suits, ties, fancy dresses and shoes indicating a substantially higher disposable income than your average Guanacasteco. The parking lot crammed with cars whose hubcaps alone would fetch the price of my bicycle.

The event: The presentation of the book *Environmental Agenda for Water in Costa Rica*, a multi-agency effort over several years to define the scope and future outlook of the water resources of the country. Financed by the CR-USA Foundation, directed by CINPE, the Universidad Nacional's natural resource research "think tank," the book presented an in depth look at the most vital resource on the planet—long taken for granted by a country where it happens to rain a lot.

A couple of articles the following week in La Nación only confirmed the level of detail presented at the conference. The Rio Tarcoles in San Jose is 370,000 times over the 'permitted' level of contamination. Sewage flows from an estimated 1.5 million individuals into rivers at a rate of 1800 liters per second. Guanacaste earned mention as the part of the country with the most threatened aquifers the fastest rate of growth and dire warnings that our periodic droughts will only get worse as the El Niño effect strengthens due to global warming.

So why was I feeling so smug? A year ago in the article "Water Water Everywhere..." (Howler 10/'04) spelled out the water issues in Guanacaste with specific references to previous studies at the national level, my own experiences with the huge water problems in the southwestern US, and modest efforts here to address the issue. Since then dozens of readers have expressed their concern and a local development has put a considerable amount of time and money into the effort to infiltrate more water into our own aquifer. In combination with the University of Vermont, El Centro Verde is having a course on strategies for reforesting our entire watershed. And, last week I had the pleasure of seeing "fishies" which migrated upstream into a water harvesting system we were building.

The problem with the Greater Metropolitan Area is basically a huge example of bad urban planning, lack of available resources and an outdated regulatory system with overlapping agencies and no one with a sign on his desk that says "the buck stops here." As the head of MINAE said, hey, it used to be the same in the developed countries, they just realized they had a problem and fixed it. To a certain extent that is true. I can remember seeing dead fish floating in the Potomac that my father used to swim and fish in as a kid. But how Costa Rica is going to come up with the estimated \$250 million just

to fix the sewage mess in San Jose—(should I mention the potholes???)—is a relevant question.

Fortunately, in Guanacaste there is still hope. Many newcomers to the area are quick to realize that water is an issue, and developers in the area—such as the one mentioned above—have expressed an interest in working to build water conservation **into** their projects. The integration of water management into the overall design of a project is basically the first principle of what is known in the States and Europe as “Conservation Design,” a movement which is steadily gaining ground.

When I explained the basics of biological water purification to a builder and a hotel owner from Tamarindo, both wanted systems installed immediately. Guanacastecos have proven their mettle in opposing what they see as dangerous efforts to mine water from inland aquifers and pipe it away to developments on the coast. The climactic changes referred to in last month’s Howler (“Boom or Bust?”) only demonstrate that these concerns are well founded. As Carlos Romero, the director of the underground water agency, SENARA, explained during a visit here last week: “in Guanacaste you have to find a way to live within the ‘carrying capacity’ of your watershed.”

If you want to avoid the salt water intrusión of aquifers—Samara, Tamarindo, Flamingo/Potrero—there is a basic rule. You have to infiltrate in more water than you pump out. That is “nature’s way”, wisely put by Aristotle almost 2500 years ago, and still true—more so than ever. The other rules are infiltrate it high in the hills—what the A&A calls the “upland recharge zones,” and only infiltrate water that has been filtered, otherwise someone downstream will be drinking what you flushed away.

Raised as a devout Catholic, I have always liked the Ten Commandments approach. In the case of water this time they are four, courtesy of Gerry Wilhelm, whose firm Conservation Design Forum, has designed water retention and re-use systems for developments of hundreds of homes including the award winning Prairie Crossing conservation community, not far from Chicago.

I. Water usage approaches that shed water from an area in volumes faster than it is replaced put aquifers in deficit, cause springs to dry up, and change the base flow fluxes of rivers to the point where populations of fish and other organisms are progressively stressed. Ultimately, local economies can suffer and sustained health among people can be threatened. (Note: 300,000 **reported** cases of diarrhea caused by polluted water in Costa Rica per year. Massive fish die offs a weekly news item. Even native trees die from SALT and or lowered water tables.)

II If water is handled everywhere it falls, then energy is not needed to transform it from a renegade polluted volume to a clean and useable resource.

(Example: you don't have road wash outs and flooding of downtown business districts below hillside developments. You don't need high energy input sewage treatment plants)

III Fifty inches of rain water each year amounts to about 1,350,000 gallons of free water per acre per year. (Note. Guanacaste gets on an average even more than this amount.)

IV. Water, sunlight and wind are the resources which nature provides to the top of the hill for free. Water especially should not be debauched as a waste product. (Note: Only to then be purified and then pumped back up the hill again at increasing energy costs in a country which is predicting energy rationing in 2 years.)

Honestly, after three years as a philosophy major I never thought I'd live to see the day that I referred to Aristotle—or the Ten commandments for that matter. Traumatized by the destruction of my native Southern California as a youngster, I sought greener pastures, a slower pace of life and like many opted for Costa Rica. The changes—and the accelerated rate of change---have caused concern not only for those of us who are basically thinking of what our kids will inherit. Minister of the Environment, Carlos Rodríguez, was optimistic last week, expressing the vision that his grandchildren would be able to swim in the restored rivers of the Central Valley. I didn't miss that opportunity. I invited him to participate in our watershed restoration course in January and “Water Management for Suburban and Resort Development,” the course tentatively planned for April. What was there to lose? He has grandkids. He surfs. He knows why we get ear infections downstream from the “effluent discharge.” Hopefully there are many more out there who realize that in the water cycle, ultimately, we all live downstream.

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